

SCHOLASTIC COACH

JANUARY, 1955

BUILDING AND EQUIPMENT

ISSUE • 25c

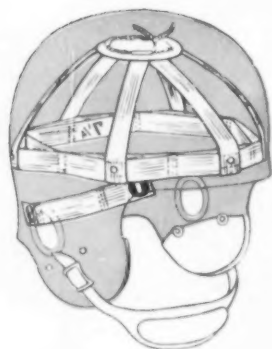
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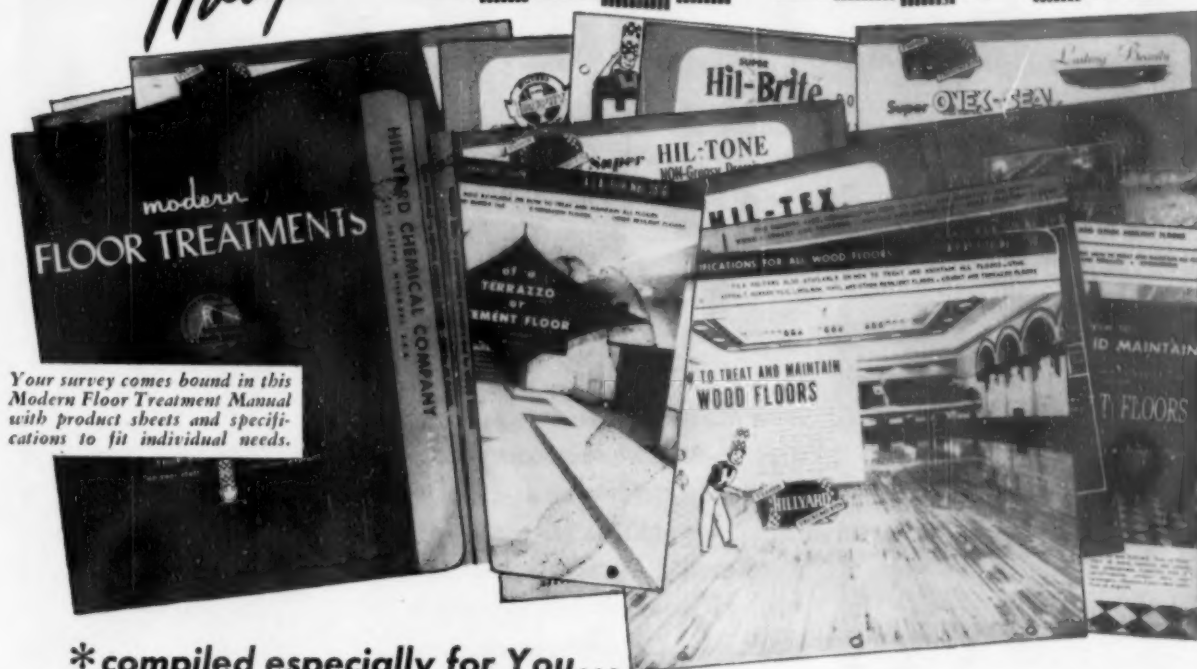
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SCHOLASTIC COACH

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VOLUME 24 • NUMBER 5 • JANUARY

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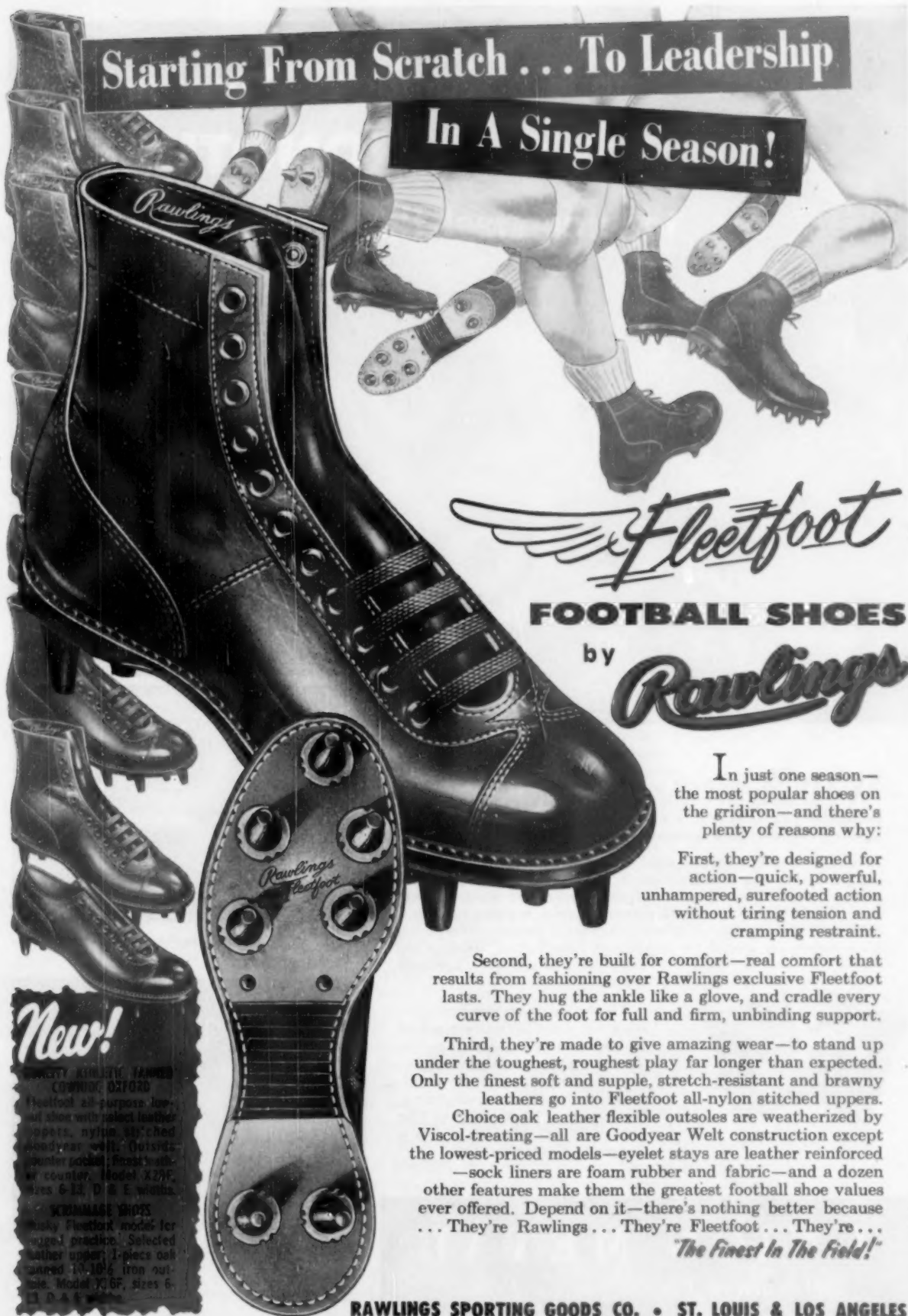
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BPA

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uppers, nylon stitched
Goodyear welt. Outside
counter pocket. Great work-
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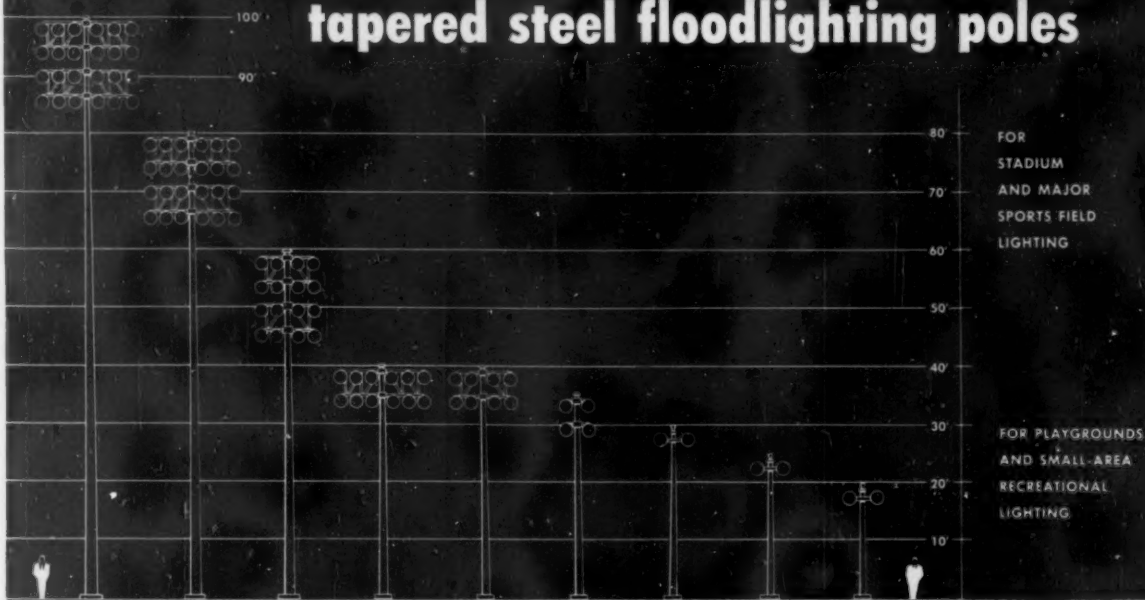
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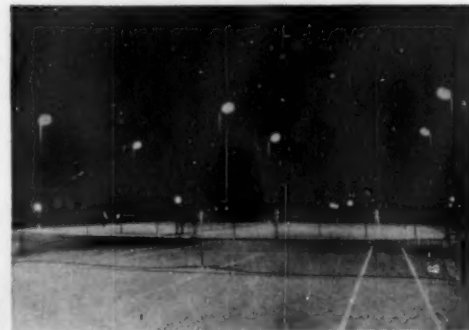


SEND FOR BULLETIN

The bulletins shown here give facts that shouldn't be overlooked in your planning—Catalog No. 76-A on sports field floodlighting; Bulletin FL-102 on small-area or recreational floodlighting. For either or both, write to The Union Metal Manufacturing Company, Canton 5, Ohio.



Typical Monotube stadium installation.



Monotubes used in small-area floodlighting.

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Monotube Floodlighting Poles



Character personified

IT'S with real pleasure and pride that we present our 17th annual Building and Equipment number. We believe it's the best issue of its kind ever to see print. Meticulously planned, edited, and illustrated, it's loaded with tasty "goodies" on many phases of the athletic plant—from planning a fieldhouse to building a charging sled.

Some of you younger fellows may wonder why a coaching magazine will devote an entire issue every year to the latest developments in building and equipment.

The answer is simple. We know that the average coach spends only part of his time implanting the rudiments of dribbling, blocking, pitching, or shot putting. The average coach is also a teacher, a facility planner, and an equipment buyer.

Few men are equipped to cope with such specialized problems, and that's where we come in. The coach's problems are our problems, and we feel that a special building and equipment issue can alleviate his burden and enable him to do a far sounder job of administration.

That we're performing a vital service is concretely proven by your steady flow of queries on building and equipment problems. We're always happy to answer your S.O.S.'s or relay them to people in better position to do so.

THE football coaches at Blake School in Hopkins, Minn. are mighty proud men these days. Not because of any fabulous won-lost record. They have a better reason. They're proud because they've done the real job they were hired for—which transcends mere winning or losing.

What a fine, rich feeling they must have had when the co-captain of the team got to his feet at the annual banquet and spoke these words.

If there's any glory in playing high school football, it certainly must be shared with the men who train us, who work so long and hard and patiently with us throughout the season.

Football is hard work to those of us who play. It contributes a great deal to our physical and mental development. Certainly we get a big kick out of the cheers from the stands and the final record we leave behind us.

But there's something far more important than the cheers or the scores. The sport of football is nothing more than a vehicle by which we absorb the principles of fair play, good sportsmanship, and the give and take of hard competition.

We're taught these things by our coaches. I believe every boy on the squad realizes that our coaches have taught us more than the techniques of blocking and tackling. Out of those long hours of calisthenics, training, scrimmaging, and playing, we've been taught many things which go much deeper.

You coaches will remain in our minds and serve as an inspiration for many years to come. Yes, indeed, *our hats are off to the finest coaches a team could ever have!*

OUR 12-inch block "CN" for Courtesy and Niceness is herewith awarded to Hilton Murphy, coach at Devilbiss H.S. in Toledo, Ohio. Nobody does a finer job of rolling out the carpet for visiting teams and coaches. At Devilbiss, all the boys and coaches get to know each other before the game, thus promoting the feeling of playing *with* rather than *against* each other.

That's certainly the desideratum in high school athletics.

Coach Murphy carries the theme of courtesy right through to the scoreboards and scorecards. Most schools designate the invading team as "Opponents" or "Visitors." On the Devilbiss scoreboards, they're called "Guests."

It's little touches like these that pinpoint the character of an athletic program. *Very nice going, Murph.*

THOUGH basketball wonders come a nickel a basket, we don't see anybody stepping into the shoes of the greatest of them all, Big George Mikan. At the ripe young age of 30, the big fellow has called it a day and is now contenting himself with general managing the team he made so famous.

Like himself, everything George did was big. He drew the biggest crowds, earned the biggest salary, and scored the most points. But he was tremendously "big" in other ways, too. His sense of fairness always matched his size. When the NBA widened the foul lane from six to 12 feet in an obvious effort to curb his scoring, the voice that spoke loudest for this discriminatory legislation belonged to George himself.

"The league did itself a favor with the 12-foot lane," he asserted. "Sure, it makes it tougher for me to score. But it also improves the game. The rule not only encourages wide open play and more outside shooting, but calls for better defense as well. It relieves congestion under the basket and ganging up on the pivot man."

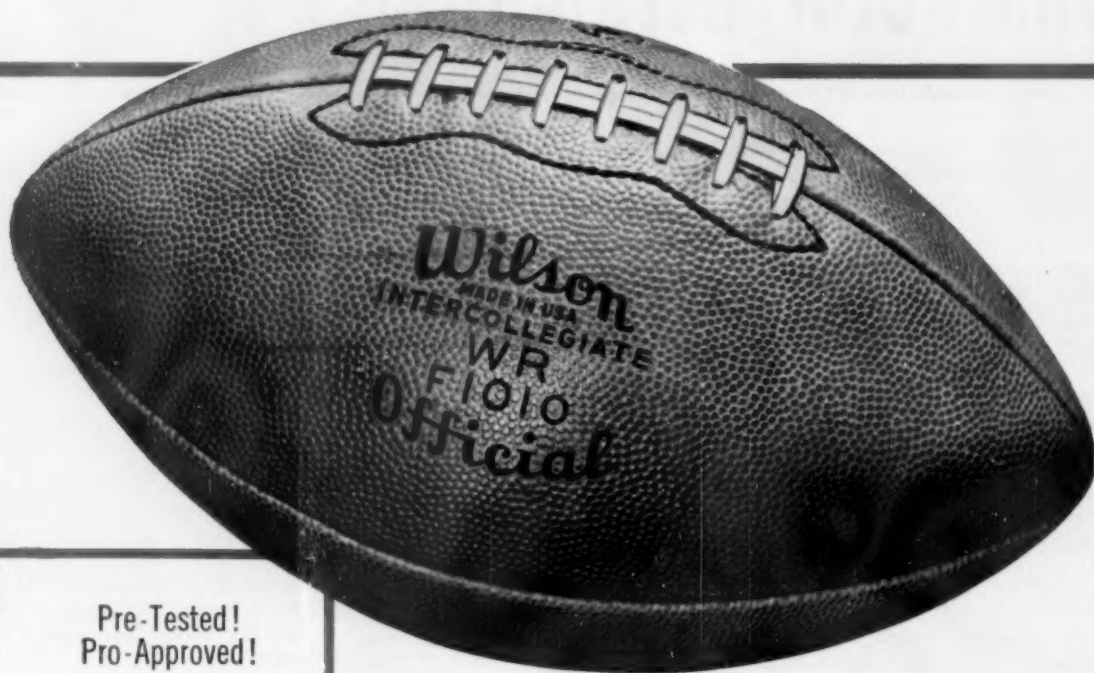
Perhaps the most impressive thing about Big George—at least to us—was his fierce, unrelenting competitive spirit. Here was a guy who was "Mr. Basketball" himself—the biggest name in the sport. Yet he played the game with all the fierceness and dedication of a high school sophomore.

Not once did we ever see him "dog" it on a play. Whether the game was positively won or hopelessly lost, Big George played it right up to the hilt—battling for the ball or driving in for the shot as if the game depended on it.

Every athlete in the land could well follow his example.

Nobody got more out of the game—and nobody put more into it. He truly was the greatest.

1955 Wilson Footballs Introduce
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- Extra space between cross laces helps passers grip ball —increases accuracy!
- Hand-sewed ends, triple lining and rugged lock-stitched seams insure true shape, true flight!
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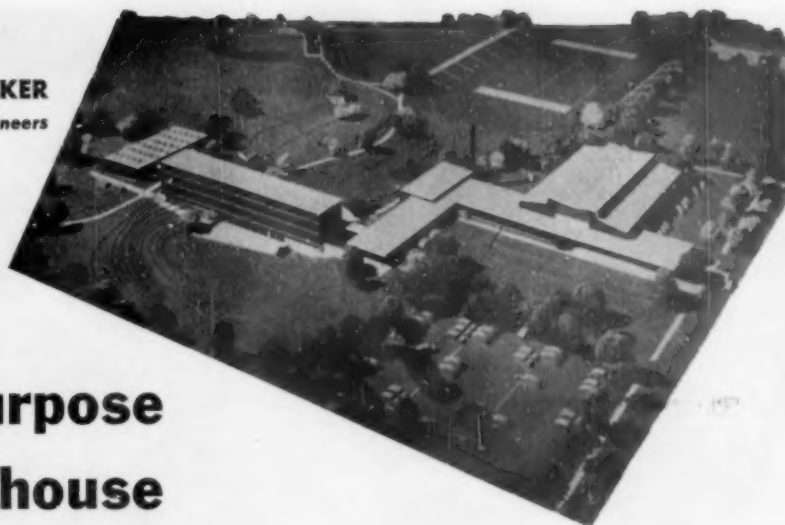
You'll cut costly fumbles—find your offense runs smoother—when your backs handle one of these new Wilson footballs. Order your supply now!

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Branch offices in New York, San Francisco and 26 other principal cities. (A subsidiary of Wilson & Co., Inc.)

By **C. W. BRUBAKER**
Perkins & Will, Architects-Engineers



A Multi-Purpose Fieldhouse

- Three thousand basketball fans.
- One thousand banqueters.
- A track meet.
- A stock show.

THESE are just a few of the things the Field House at Keokuk High School and Community College had to hold. A town of 20,000, Keokuk, Iowa, had never had a place big enough for a large banquet or a fair or an exhibit. Nor had it had a building large enough to seat the basketball fans that annually cheered Keokuk High toward the state tournament at Iowa City.

As architects, our job at Perkins & Will was to design a fieldhouse—as part of the new high school building—that would serve the needs not only of the high school but also of the community, and to build it on a limited budget.

Basic Design. Working with Coach

Don Shupe, Superintendent of Schools J. C. Wright, and Principal Franklin Stone, we considered four basic solutions:

1. A fieldhouse with clay floor, and a separate gymnasium. An ideal solution that would have saved maintenance problems by separating track from basketball, it was ruled out as too expensive and too difficult to fit onto Keokuk's hillside site.

2. A large gymnasium over an asphalt-and-rubber-floored fieldhouse area. Again, separation of track and basketball would have been advantageous, and the fieldhouse could have had a low ceiling with even a few supporting columns. Cost and exterior appearance were the deterrents here.

3. A wood playing floor surrounded by asphalt-and-rubber paving. Asphalt paving would have simplified

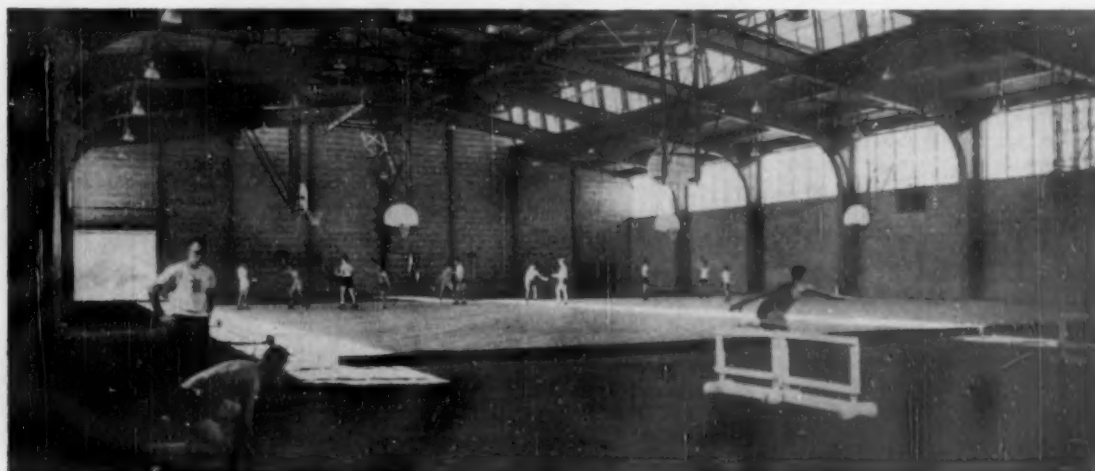
maintenance of the basketball floor and locker areas, but it limited other uses to which the fieldhouse was to be put.

4. Wood playing floor surrounded by a clay track. The most frequently used combination, this seemed to us the most adaptable solution to the multiple uses of the area.

Because Keokuk Senior High has a four-story academic wing which we felt should dominate the school, the fieldhouse is partly buried in a hillside. It lies at one end of the high school building, which stretches around a ravine through the site.

The football field lies on the broadened floor of the ravine, with baseball diamonds and tennis courts occupying the shoulders. At its south end, the fieldhouse is at ground level with direct access to the playing fields. At the north end, ground

(Continued on page 70)



The splendid Keokuk (Ill.) plant features a wood playing floor surrounded by a clay track. When overhead type

of door (left corner) is opened, the straightaway of track can be extended outdoors to 100 yards—in four lanes!



The superb 75' by 42' pool, replete with observation windows in corners, underwater lighting, and balcony seats for 270.

REC BUILDING SUPREME

A MODEL of intelligent planning, Grove City College's new Recreation Building is one of the neatest, most utilitarian physical education plants in the East. It's attractive, it's economical, it's functional—all you can ask of a modern recreational building.

A two-story affair, 460 feet long by 160 feet deep, the building proper houses six main units laid out side by side and connected by a long corridor running along the front of the building from one end to the other.

Comprising the extreme southern end is an **Alumni Hall-Student Union**. The first floor of this section contains two units—a large, beautifully furnished lounge where alumni and parents may visit with each other or with faculty and students, and a Fountain Room where students may meet over a cup of coffee, a soft drink, or a light lunch.

The lounge and Fountain Room are separated by a lobby, whose walls contain panels, suitably lettered, commemorating former students, faculty, alumni, and trustees. These panels are placed toward the ends of the walls, the center portions of the walls being composed of glass—permitting a clear view of both rooms.

The second floor of Alumni Hall contains 11 beautifully furnished sleeping rooms and a guest suite, each with private bath, for the use of alumni, guests, and visiting parents. Also on the second floor of this section is a large meeting room for the Alumni Council, Student Council, and other important groups.

Under Alumni Hall are eight **Bowling Alleys** which have proven to be one of the most popular features of the building. During the past year, four nights a week were reserved for interfraternity, W.A.A., independent, and faculty league games. The other two nights were set aside for open bowling by both students and faculty.

Four afternoons a week were reserved for intramural bowling by both young men and women, while the other two afternoons were set aside for open bowling.

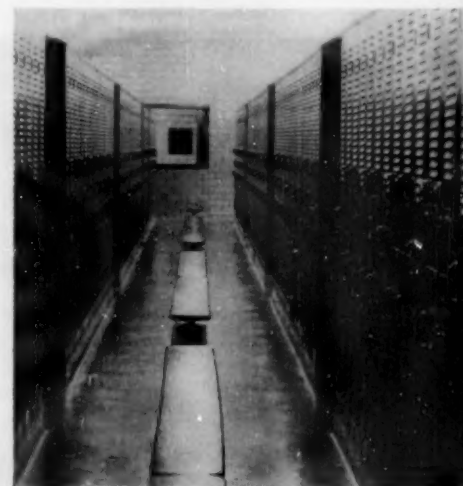
Moving down the corridor toward the north end of the building, the next section you come to is the **Arena**—and a beauty it is.

Seating about 850 on each side, the permanent steel stands are of a relatively new design. The risers are pointed steel plates, while the treads are concrete laid on Robertson's Q. type flooring. Since the first tier of seats rests six feet above the

playing floor, it's possible to increase the seating capacity by installing temporary or folding stands.

Under the stands are large storage areas, the intramural locker room, and portions of the Alumni Hall section of the building.

The basketball floor, made of maple, is of the ironbound continu-



Intramural Locker Room, containing 536 lockers—with one large single tier unit serving each pair of double-tier lockers.

By **ROBERT E. THORN**

Athletic Director, Grove City (Pa.) College

ous strip type. Two skylights appear in the ceiling above it, each running across the playing floor about midway between the foul and center lines. The sunlight pouring through these skylights gives the Arena a cheerful appearance throughout the day.

Illumination for night use is more than merely adequate. There are 24 lighting units over the playing floor, each consisting of a cluster of three 500-watt lamps which are enameled and have glass-mirror reflectors. Ordinarily, just two of the lamps in each unit are used for games.

In addition to the standard bank-boards and baskets—each 13 feet from the end wall—the gym contains two extra baskets (on one end wall) for foul shooting practice plus an electric scoreboard at each end.

Still moving up the long corridor toward the north end of the building, you next come to the **Intramural Locker Room**. This unit contains 536 lockers arranged in double tiers. Serving each pair of double-tier lockers, or four individual lockers, is a single-tier locker where street clothes may be stored when the student dresses for gym.

Abutting the locker room are two shower rooms and a men's room. The showers are located between the locker room and the pool—mak-

(Continued on page 68)



Gym, or Arena, with ironbound continuous strip maple floor, glass banks, foul-shooting practice baskets on one end wall, electric scoreboard at each end, 24 lighting units, and permanent steel grandstands.



The 100 by 160' Intramural Room, containing 2 regulation basketball, 2 volleyball, 4 badminton, and 2 shuffleboard courts. Floor is of mastic tile, with court lines of inlaid tile in contrasting colors.

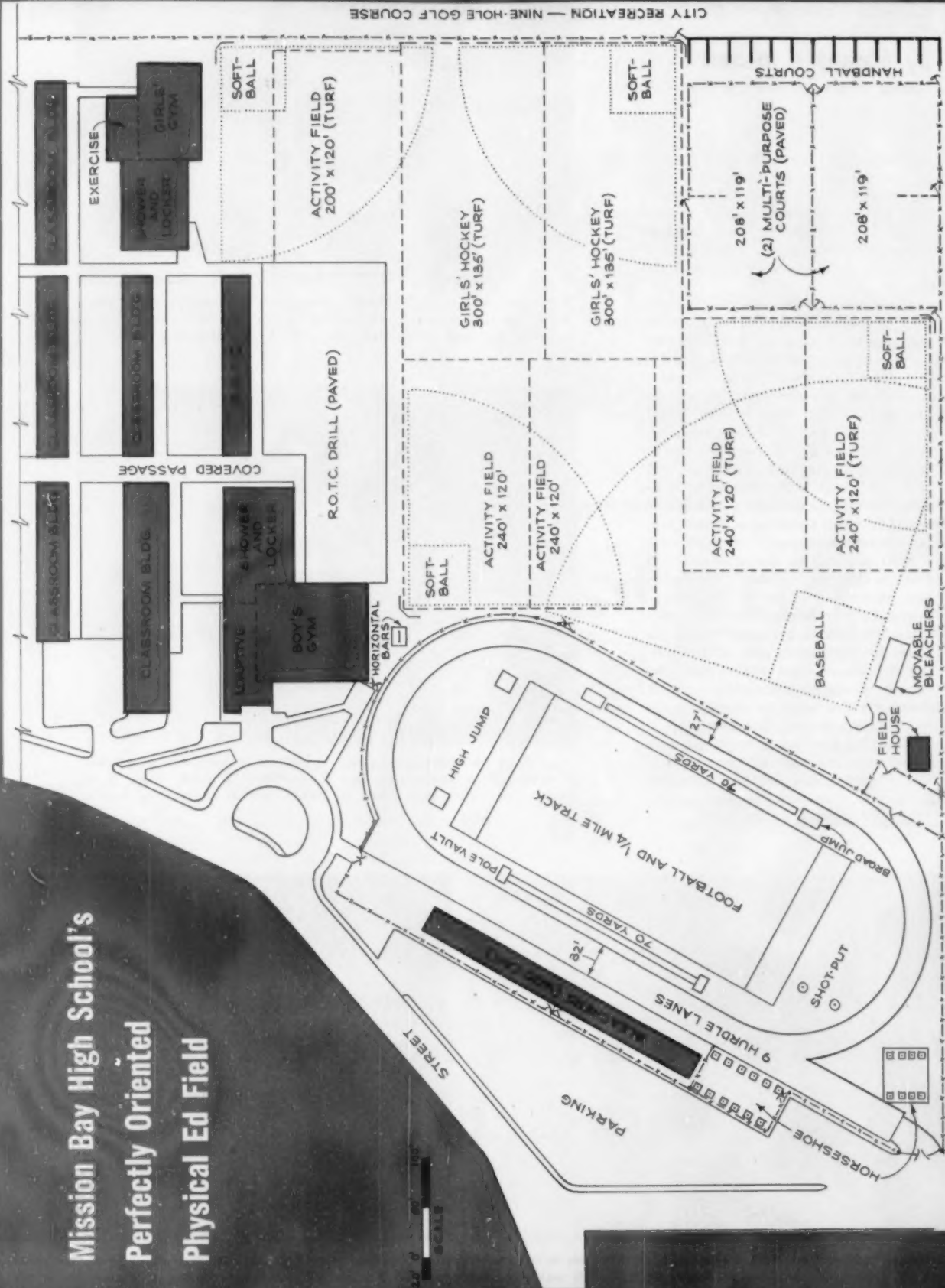


Magnificent corridor and lobby, with double-door entrances at right and doors leading to Arena at left. This unit features glazed tile walls, terrazo floor, and sound-treated ceiling.



The Bowling Alleys under Alumni Hall, one of most popular features of building, catering to fraternity, co-educational, faculty, intramural, and general student groups.

Mission Bay High School's Perfectly Oriented Physical Ed Field



Outdoor Facilities Tailored to the Program

SOME years ago, in San Diego, a need arose for an objective study of the physical education program and facilities. Consequently, a steering committee was formed and catapulted into action.

Since the facilities of a public school district should be geared to the objectives of the program, coaches, teachers, principals, and community representatives were encouraged to look first to objectives, and then to program and facilities.

Once the objectives and the program were decided upon, certain facility planning was undertaken and minimum standards established. Some of the salient points were:

1. A class of 40 students would be used as the basic unit.

2. Facilities must be provided to fit the class size. As an example: Handball was selected as an activity; therefore, to accommodate a class of 40, 10 courts were needed. This number was recommended and the courts are being placed on sites as plans mature.

3. Facilities should possess multiple use. Thus, handball courts also serve as tennis driving walls as well as areas for other games.

4. Girls and boys may have separate field areas, but should share many of the facilities. This mandates joint program planning by girls' and boys' department chairmen.

5. New schools are built to committee-approved standards. Older schools will be brought to standard on a priority item basis over a short period of years.

6. Standard drawings have been developed for all facilities and equipment used. These are developed by the Physical Education Office, approved by the Steering Committee, drawn by the Architect's Department, and approved by the Business Office. The plans are revised constantly as needed.

7. Facilities are located functionally. Example: handball courts are built adjacent to the multi-purpose

courts to provide additional area for tennis classes. They are built 10 in a row, open-faced for good supervision, with sloping sides for support and for partial wall play.

Activities in the regular instructional program for boys are recommended as follows:

	No. weeks of each grade level		
	10	11	12
Administration	2	2	2
Badminton	4	4	4
Basketball	4	4	4
Gymnastics	4	4	4
Handball	2	2	2
Horseshoes	2	2	2
Softball	4	4	4
Tennis	2	2	2
Touch or flag football	4	4	4
Track	4	4	4
Volleyball	2	2	2
Wrestling	4	4	4
Coed social dancing & games	2-4	2-4	2-4

Facilities are also developed with consideration to the needs of the intramural programs of both boys and girls. Again, this necessitates proper planning by the two department chairmen.

These same facilities are also

planned to serve the needs of the interscholastic athletic program. The team activities are:

Football—varsity and junior varsity.

Basketball—varsity, sophomore, and Class B (classes are determined by allowing a certain number of exponent points each for height, age and weight).

Track—varsity, Class B, and Class C.

Baseball—varsity and junior varsity.

Wrestling—varsity.

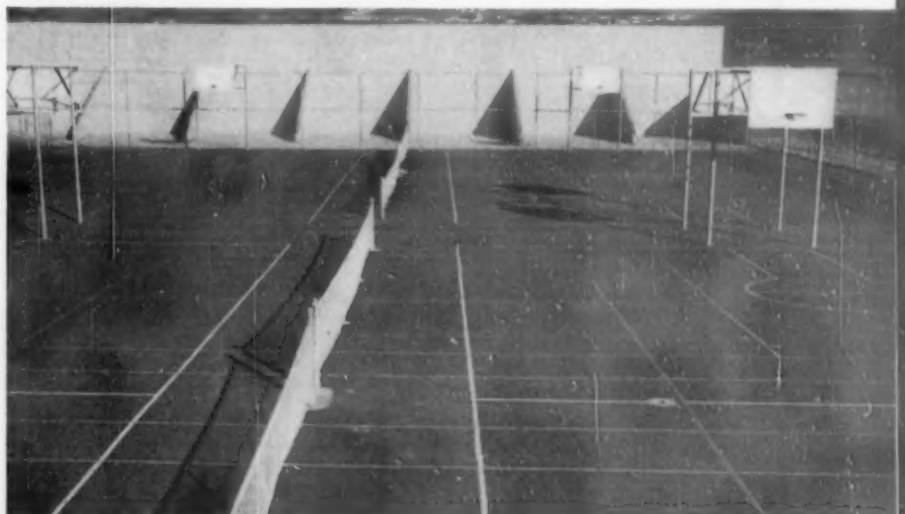
Golf—varsity (use of community courses is arranged).

Tennis—varsity.

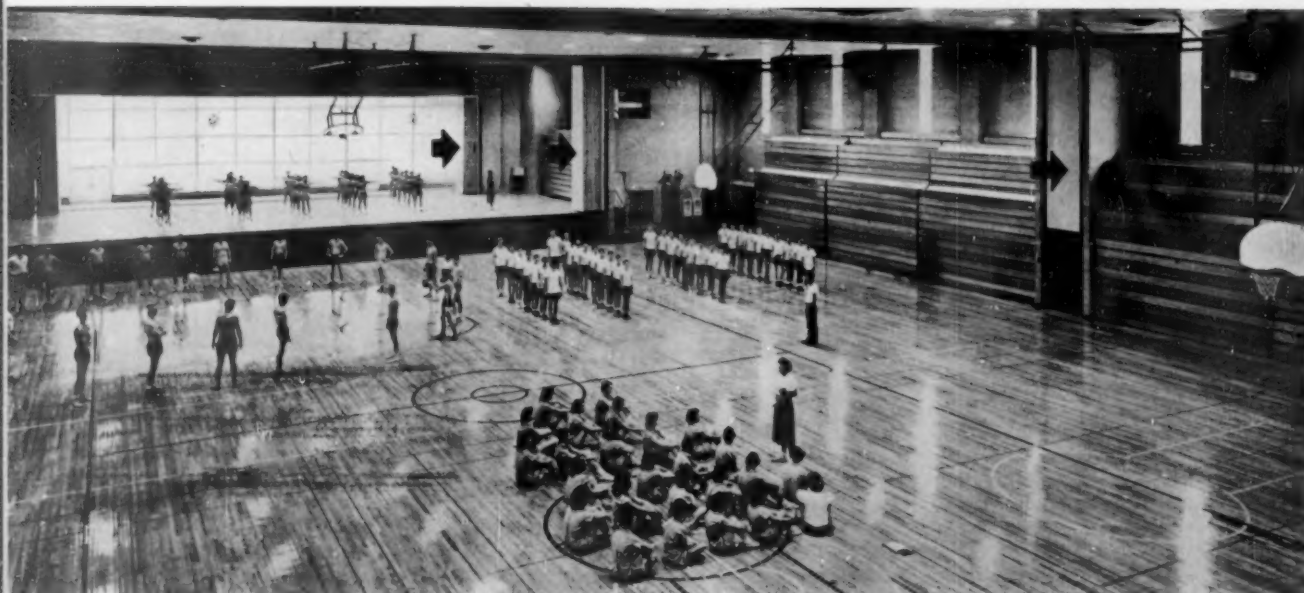
Cross-Country—varsity (use of San Diego State College course is arranged).

Because it's possible to be outdoors all but a very days of the year, San Diego has less need for indoor facilities than do schools in colder climates. Quite naturally, an outdoor games type of program evolved first, with indoor facilities being developed slowly and with some resistance. This has been one of the

(Continued on page 60)



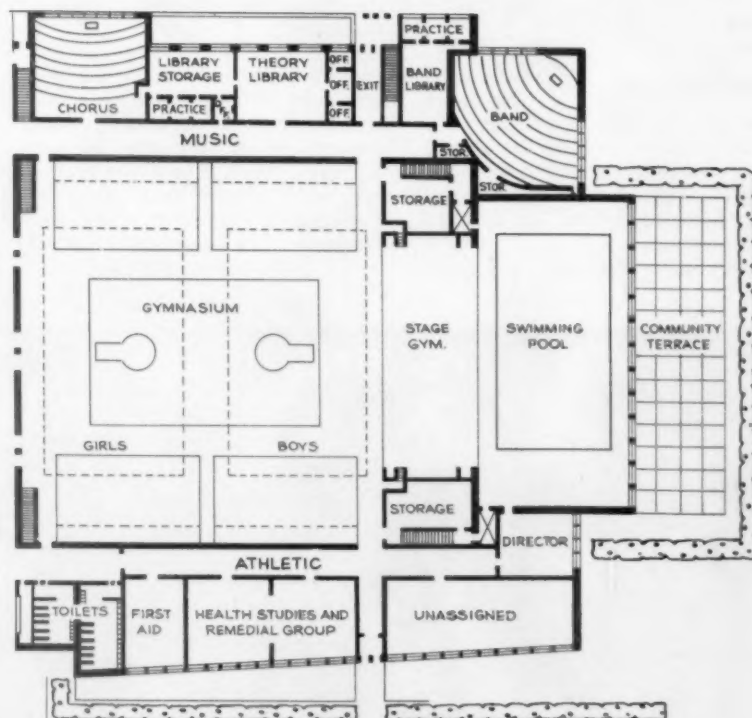
Mission Bay's superb handball-tennis-basketball-volleyball all-purpose court.



A cinemascopic view of the magnificent Riverside-Brookfield plant, showing four of the major units: girls gym, boys gym, auxiliary gym-stage, and swimming pool (between stage and

windows). Three electrically controlled folding partitions, designated by arrows, separate these units. Note the excellent distribution of the rollaway bleachers and foldaway banks.

A Model High School Physical



By **W. A. (BARNEY) DUDLEY**
Riverside-Brookfield (Ill.) High School

RIVERSIDE-BROOKFIELD (Ill.) H.S. opened its new health and physical education facilities in September, 1954. A contribution to the educational opportunities of our communities and a structure of which all Chicago suburbanland can well be proud, the addition fulfilled a long-awaited need for modern facilities and equipment with which to carry on our physical ed work.

To make community use of the facilities both efficient and inviting, the plan centers around a wide axial corridor easily accessible to rear and front parking areas and designed to handle large crowds for special athletic events and community functions.

The main gymnasium is arranged for sub-division into boys and girls gyms and has a raised platform at one end to serve as a third auxiliary gym or a spectator gallery for swimming and pool events. The space beneath this platform is utilized for chair storage.

All elements of both the old and new buildings have easy access to the wide main corridor gallery. Whenever necessary, however, the academic area proper can be closed to the public. This is done whenever any of the areas grouped on either side of the corridor are used for community activities.



For graduation exercises every year, the gym unit accommodates 4,000 people. Note all that natural lighting behind the graduates standing on the stage-gym.

Ed Plant

The main units shape up as follows:

Gym Facilities. The physical education program is centered in a gym 130 feet by 130 feet which, with folding bleachers, has a seating capacity of 3,000.

The main gym has a regulation high-school basketball court 84 by 50, running east and west. This may be divided into two separate gyms by a large electrically operated folding partition. Each of these two areas, used for physical education classes, is 120 by 65. Three volleyball courts and five badminton courts are available for use in each gym.

Our student enrollment is 1150. The boys use one gym and the girls the other. Foldaway basketball backboards are utilized in three positions in each gym. Glass basketball boards are used on the main court.

The entire gym area is illuminated by 16 glass brick windows (8 on the south and 8 on the north) and 64 heavy duty 1000-watt incandescent lights, which are placed in the ceiling.

The school has a central heating plant consisting of three 200 horsepower oil burning high-pressure steam generators.

The gym is heated and ventilated



Outside view of east side of building, showing thermo-pane plate glass windows which provide natural light for pool and stage-gym.



Cement pool, with folding partition on left closing it off from stage-gym and thermo-pane glass windows along entire right side.

The wide, easily accessible axial corridor, replete with glass-enclosed trophy cases, running along the front of the building.





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● It's the *plus* factor that makes American the most respected name in Playground Equipment... *Plus* in design—American leads the field. ...*Plus* in performance—*Approved* Equipment stronger, more ruggedly built to assure a lifetime of perfect repair-free service... *Plus* in safety—for American craftsmen are aware of their responsibility for the safety of your children. Thus, with American you receive far superior design and performance and unmatched safety.

Write for Literature



BRANCH PLANT AT NAHMA, MICHIGAN

through a low-pressure steam system with distribution of tempered air through ducts with openings in the ceiling of the gym.

A similar but separate heating and ventilating system takes care of the swimming pool area. This includes a steam heat exchanger for maintenance of suitable temperatures for the water in the pool.

Thermostatic controls are located at various points to automatically supervise this system.

Announcements are made over four public address speakers located in each corner of the ceiling pointing towards the center of the gym. A junction box in the floor furnishes the necessary connections for our public address system and basketball scoreboard as well as a telephone connection for radio broadcasting of our basketball games.

Connected to two corners of the gym are storage rooms which provide storage space for our physical education equipment.

Auxiliary Gym. Directly adjacent to the main gym is a stage or auxiliary gym 100 by 36 feet which is equipped with roll-away bleachers with a seating capacity of 500.

These bleachers have a three-fold purpose. They may be turned to face the swimming pool, turned to face the end zone of the basketball court, or rolled out for spectators at wrestling meets. It serves as another teaching area for physical education classes.

Our auxiliary gym is used as a stage for our Music Festival and graduation exercises each year. It is available for large community gatherings, with a seating capacity of 4,000.

Multiple-Purpose Room. Included in our facilities is a multiple-purpose room 73 by 26 feet which is equipped with two large 6 by 6 mirrors for modern dance for girls, individual gym activities, meetings, and visual education. This room can be divided into two class rooms by a folding partition. It, too, serves as another physical education teaching area.

Corrective Room. A corrective room, 30 by 26 feet equipped with stallbars, chest pulley weights, mirrors, mats, and other gym equipment for remedial physical education classes.

Health Clinic. Our school nurse occupies the clinic headquarters. It consists of a waiting room, nurse's private office (glass enclosed on two sides) for observation of boys and girls, rest rooms, and private toilet facilities.

Physical Education Offices. The physical education department has

EQUIPMENT SUPPLIERS

Gym Floor—Chas. H. Anderson Floors
Bleachers—Wayne Iron Works
Backboards—Fred Medart Products
Scoreboards—Fred Medart Products, Greenfield Co.
P. A. System—Rauland and Borg Co.
Pool Lights—Crouse-Hinds Co.
Gym Equipment—J. E. Porter Corp.
Corrective Room Equipment—J. E. Porter Corp.
Lockers—Interior Steel Products
Hair Dryers—Chicago Hardware Foundry
Folding Partitions—Richard-Wilcox Mfg. Co.
Pool Equipment—Adolph Kiefer Co.

two offices on the ground floor, one for the women and the other for the men.

Dressing Rooms. Locker rooms are located in the basement. Included in that area are: Staff room facilities, 14 by 10 feet with toilet and shower; first-aid room, 15 by 8 feet; two team rooms, 22 by 10 feet, with one shower room 10 by 10 feet possessing eight shower heads and toilet facilities.

Between the team rooms is a drying area 11 feet by 3 feet 6 inches.

The physical education locker room has a towel room 15 feet by 8 feet; three shower rooms 9 feet 6 inches by 12 feet 6 inches with eight shower heads, and one 14 by 10 feet with 10 shower heads, and a drying area 41 feet by 5 feet.

There is a large locker room 23 feet at the narrow end, then widening to 39 feet; the total length coming to 87 feet.

Swimming Pool Dressing Rooms. The locker room is 42 feet 6 inches by 30 feet, toilet facilities 13 feet by 5 feet, towel room 9 feet by 6 feet, shower room 8 feet by 20 feet, then widening to 14 feet—the total length coming to 34 feet with 19 shower heads.

The girls' department is practically identical except for three individual showers and hair dryers.

The locker rooms have five 12 by 12 box lockers to one large 12 by 12 by 60 which will accommodate 2,000 boys and girls.

Indoor Swimming Pool. A feature of our new facilities is the indoor swimming pool adjoining the auxiliary gym on the east. Separated from the auxiliary gym by electrically controlled folding doors, which can be opened, the pool is laid out so that the folding bleachers for the auxiliary gym can be turned to provide a seating capacity of 500 seats for swimming meets and water shows.

(Concluded on page 32)



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have on hand!**

Gloves and Mitts by MacGregor

Many of the game's greatest "glove men" give a hand to MacGregor baseball gloves and mitts. Stars* like Willie Mays, Red Schoendienst, Ted Kluszewski, Richie Ashburn, Jack Jensen and Bob Thompson—to mention just a few. They'll tell you that MacGregor's design, materials and skill add up to better gloves *and better defensive play!*

Willie Mays, great centerfielder of the World Champion N. Y. Giants, makes all his sensational catches with the help of his MacGregor Glove.

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GOLF - TENNIS - ATHLETIC EQUIPMENT

"The Choice of Those Who Play the Game"

CINCINNATI 32, OHIO



The main gym floor features an electrically operated folding door which divides the area in two, basketball backstops which are raised or lowered by a manually operated gear box, and folding bleachers which accommodate 1,000 spectators.

THE NEW WINDSOR GYM

THE gymnasium and allied facilities at the new Windsor H.S. are part of the separate gymnasium-auditorium unit adjacent to the classroom portion of the school building.

The main entrance to the gymnasium from the west is accessible from the parking area serving 300 cars. Three triple doors open into the vestibule and on each side are located ticket booths and a large coat room. The vestibule leads into a large lobby for combined use of auditorium and gymnasium.

The lobby, finished in American elm plywood, has built-in trophy cases (individually lighted), telephone booths, and toilet facilities.

Gymnasium: The gymnasium floor, built of maple, has facilities for two badminton courts, two volleyball courts, and two basketball practice courts. The main basketball court is equipped with an electric scoreboard, and electrically-operated folding doors completely divide the room into two practice gyms with supplementary floor areas on either side. Basketball backstops are raised or lowered by a manually operated gear box.

Seating for 1000 spectators is provided by folding bleachers which, when closed, permit use of practically the entire floor area.

Shower Rooms: Identical shower and locker facilities for boys and girls are located on either side of the gym. These are constructed of structural glazed tile walls, ceramic tile floors, and acoustical tile ceiling.

The location of the locker rooms is felt to be the most convenient for both indoor athletics and outdoor games. The entrance from the locker rooms to the showers is past toilets so that students will utilize the toilet facilities before using the showers.

Adjoining the shower rooms but separate from them are drying rooms which have the same maintenance-ease materials as the shower and locker rooms.

In order to offset the objections of some parents and school officials to having girls use gang showers, there are two individual shower-dressing room cubicles located in the girls' drying room.

A visiting team locker room is provided in the boy's section with separate entrances from athletic field and gymnasium. This section also has its own shower and drying room as well as toilet facilities.

Equipment Storage: Ample provision is made for the storing and safe-keeping of all equipment used in the gymnasium and athletic field. Due to the fact that this equipment

By **VICTOR A. FRID**

Ebbets, Frid & Prentice, Hartford, Conn.

is expensive and warrants proper storage facilities, lockers, bins, shelves, and closets are provided in sufficient number to meet peak requirements plus expansion needs. This room is located adjacent to the physical instructor's offices for immediate supervision. Both inside and outside doors are 6' wide to allow traffic of large items.

Administrative Facilities: The location of these facilities was made so that the main gymnasium as well as the special exercise rooms would be under constant supervision. Effort was made to have the instructors' facilities as compact as possible but still a complete unit with separate toilets, showers, and dressing rooms.

Special Exercise Rooms (Corrective Gyms): These facilities were added because of the physical education teacher's need to work with small groups from time to time. Equipment is provided for the analysis of posture of the students.

Health Classrooms: A classroom has been set aside for health and physical education instruction. Health experiments are conducted which would not be possible in an ordinary classroom not equipped with experiment tables and such other facilities. This classroom is also used for lectures on sports rules, formations, etc.

Playground and Athletic Field: Present outdoor athletic facilities include: 4 softball diamonds, 2 regulation baseball diamonds, 3 soccer fields, 1 field hockey field, football field, ¼ mile cinder running track, and 5 clay tennis courts. Picnic areas and fireplaces have been anticipated on the original site plan and will be added to present facilities as time and budget permit.

EQUIPMENT SUPPLIERS

Bleachers (Arena)—Wayne Iron Works
Bleachers (Outside)—Hussey Mfg. Co.
Backboards—J. E. Porter Corp.
Scoreboard—Narragansett
Lockers—Berger Mfg. Co.
Shower Fixtures—Speakman
Gym Apparatus—J. E. Porter Corp.
Gym Mats—Petersen & Co.
Folding Gym Doors—Horn School Equip.



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OCTOFEN LIQUID

OCTOFEN LIQUID containing the powerful fungicide 8-hydroxyquinoline, kills the arch criminal in athlete's foot, *T. mentagrophytes*, in two-minutes flat in laboratory tests. Merely swab affected parts generously — continue treatment until relieved. Even well entrenched cases often respond in as little as two weeks. OCTOFEN LIQUID is non-irritating, greaseless, easily applied, dries quickly, leaves no stain.



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For added assurance against athlete's foot, advise generous dusting of the feet and socks with soothing, silky OCTOFEN POWDER between liquid applications. Containing moisture-absorbent silica-gel as well as 8-hydroxyquinoline, OCTOFEN POWDER soothes tender and irritated feet; helps keep them dry; checks foot odors.



Success in the squared circle rarely comes without winning foot work. In fistiana, it is axiomatic —when foot work slows down, decline sets in. *Athlete's foot* may take its toll of *winning foot work* long before the normal fight career span is ended. Endless hours of punishing gym and road work leave the feet susceptible to heat, sweat, constant pounding — skin broken by abrasion or laceration — easy victims to the insidious athlete's foot causing fungi ever present in locker and shower rooms.

Smart fight trainers and doctors recommend OCTOFEN at the first tell-tale signs between the toes of redness, cracking, itching. They know that OCTOFEN deals knockout blows to athlete's foot — enemy of winning foot work.



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Every feature
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is a reason by itself
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SAFETY. All-steel under-structure of (A) tubular column supports and (B) cross tie angles and bracing (no sway, shimmy or shaking). Exclusive positive lock made of steel (C) automatically locks each row as it opens and closes.

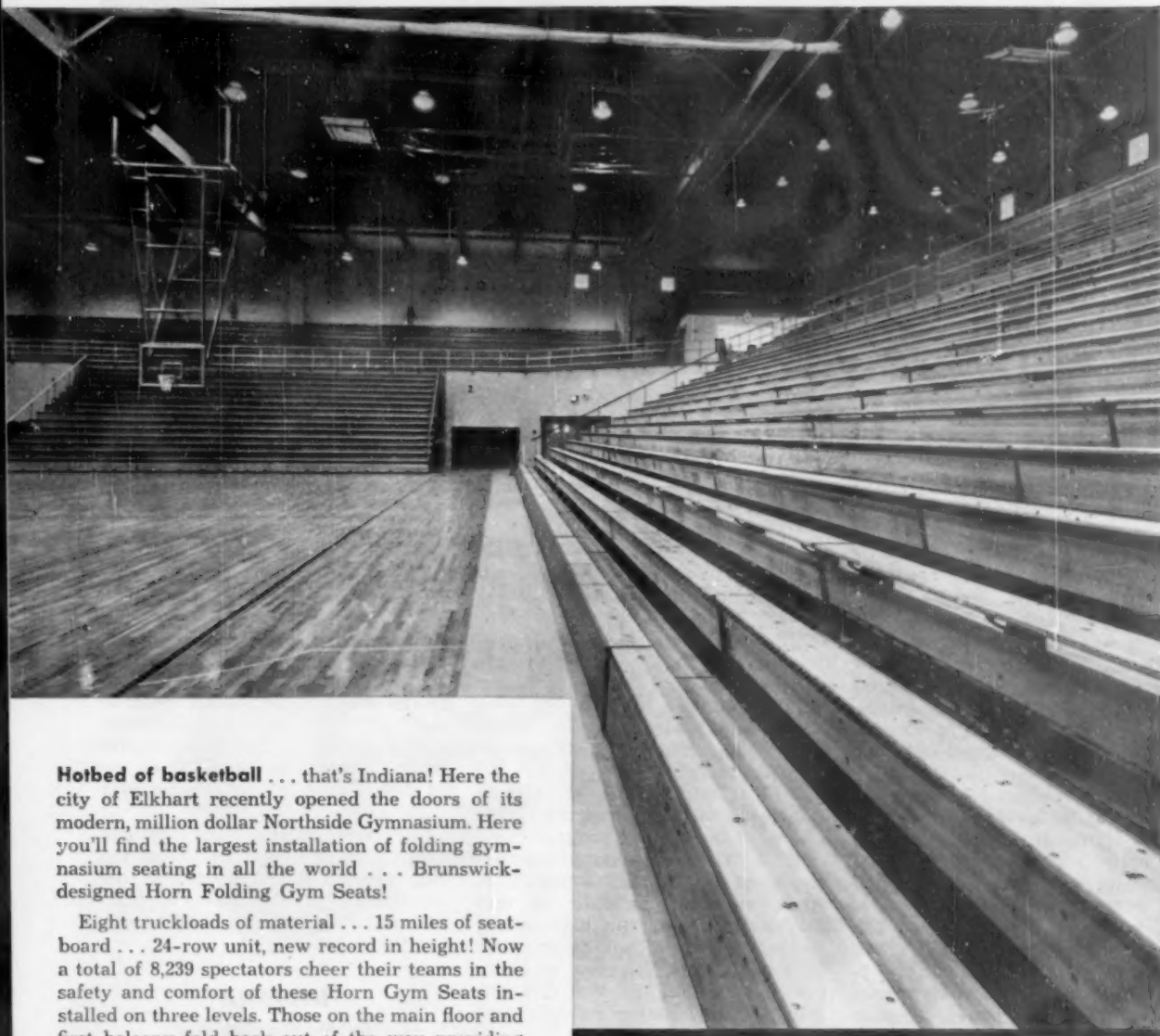
COMFORT. Spectators sit in chair-height comfort,

move legs freely. Custom-fitted for your needs from a choice of 9", 11" or 11½" rise and 22" or 24" spacing.

EASE OF OPERATION. One smooth flow of pressure to close . . . seatboards remain flat, footboard tilts vertically, new riserboard swings out to form closed surface. Non-marring wheels.

LARGEST

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Hotbed of basketball . . . that's Indiana! Here the city of Elkhart recently opened the doors of its modern, million dollar Northside Gymnasium. Here you'll find the largest installation of folding gymnasium seating in all the world . . . Brunswick-designed Horn Folding Gym Seats!

Eight truckloads of material . . . 15 miles of seat-board . . . 24-row unit, new record in height! Now a total of 8,239 spectators cheer their teams in the safety and comfort of these Horn Gym Seats installed on three levels. Those on the main floor and first balcony fold back out of the way providing five basketball courts in all.

Horn Folding Gym Seats were made to do the biggest job best! Custom-made to the exact specifications of Brunswick design engineers. And Brunswick has added to these gym seats even more refinements for greater safety, comfort and ease of operation . . . better appearance . . . less maintenance.

No problem is too simple or too complex for a Horn solution . . . no gym too small or too large for an installation of Horn Folding Gym Seats. Why not talk it over person-to-person? Write or wire today for the name of your nearest Horn agent.

Free! "Horn Folding Gym Seats" . . . catalog of facts, yours for the asking. Write today!



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**THE BRUNSWICK-BALKE-
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Nocturnal action at Plant H. S., Tampa, Fla. Night games produce bigger crowds—with less competition from colleges and TV.

EVEN the most fervent disciple of daytime football can no longer escape the handwriting on the mazda: Night football is looming larger and larger in the high school shape of things.

Scholastic Coach has followed this development with the closest interest. Over the past 15 years, no other school publication has devoted so much space to the general and technical aspects of the mazda-miracle.

In an effort to illuminate the latest developments in the field, *Scholastic Coach* this year launched a sweeping cross-sectional survey on the status of night football in the country's high schools. We were specifically interested in two things: (1) How much night football is being played in the U.S., and (2) What has it meant in dollars and cents to the athletic budget.

The state secretaries in eight major football-playing states, together with an outstanding high school league in each state, were contacted for information—and the returns were simply amazing! We had always known that night ball was on the upswing, but hadn't realized to what extent this was true.

In Texas, for example, R. J. Kidd, director of the state interscholastic league, informed us that there are 890 high schools playing football—and every one of them plays on lighted fields! "So far as I know," says Mr. Kidd, "there isn't a school which doesn't have a lighted field.

Floods that Pay!

A nationwide high school survey reveals

an overwhelming trend toward night football

In fact, quite a number are constructing lighted fields for baseball, too. Night football has proved extremely lucrative, paying for the cost of lighting and providing additional income to support other phases of the athletic program.

E. A. Thomas, famous commissioner of the Kansas State H. S. Activities Assn., informs us that practically all of the high school football in Kansas and other states in the midwestern area is being played at night! And that this also goes for the junior colleges and small four-year colleges.

L. V. Phillips, commissioner of the Indiana H.S.A.A., tells us that night football is practically universal among the 175 state high schools playing the 11-man game. "Night games," he says, "have been the salvation of high school football in Indiana."

H. M. Emswiler, commissioner of the Ohio H.S.A.A., asserts that well above 80% of the high schools in Ohio are playing night games.

Ken Fagans, commissioner of the Southern Section of the California

Interscholastic Federation, tells us that of the 220 high schools under his jurisdiction about 180 play night football—and that about 22 of the 34 high schools in Los Angeles play night games.

This story is repeated over and over again in every section of the U.S. Following are several of the outstanding reports received from various high school leagues throughout the country.

INDIANA

By Marion Crawley

Jefferson High School, Lafayette

MOST Indiana high schools play all their football games under the lights. And the results have been excellent. The revenue from night ball more than doubles the receipts of daytime contests. And this has provided the school athletic department with the wherewithal to purchase additional equipment and to outfit more boys with better protective equipment.

School officials are happy with night football because of the negligible loss of school time by players



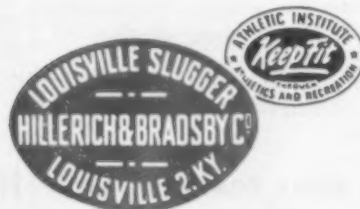
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SHOW THIS GREAT FILM AND RELIVE THE THRILLS OF THE 1954 SERIES

The Hillerich & Bradsby Company is happy once again to offer you, through your sporting goods dealer, the official World Series Movies. This exciting film with all the color and action of the great '54 event will be released shortly after the first of the year. The film is 16 mm and can be used only on a sound projector. Be sure to make your request early.

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See your sporting goods dealer to order the film. Advise him of the most suitable date, but mention two alternate dates, either of which would be satisfactory in the event the date preferred is not open. The demand is great, so act at once. See your dealer!



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● It's official! All Nurre Glass Banks are fully approved by the National Basketball Committee... not to mention enthusiastic players, coaches, and spectators!

Nurre Banks are guaranteed against breakage in normal use. And here's one for the record books: in 30 years, no Nurre Bank has ever been broken in play!

In addition to the rectangular and fan-shaped banks shown here, Nurre offers a low-cost, rectangular model with 12" wood panel extending across bottom.

Order goals from Nurre, too. Specify type of bank—all-glass or with wood strip.

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INSTALLATIONS OF NORTH CENTRAL CONFERENCE (INDIANA)

School	Enrollment	No. of Poles	Ht. of Poles	No. Lights Each Pole	Total Lights	No. Watts Each Lamp	Total Wattage
Muncie	2600	8	100'	18	144	1500	216,000
Technical	4463	6	100'	10	60	1500	90,000
Jefferson	1400	10	70'	10	100	1500	150,000
Logansport	1020	8	80'	10	80	1500	120,000
Richmond	1800	8	60'	10	80	1500	120,000
Frankfort	790	8	60'	5	40	1000	40,000
New Castle	1190	8	60'	5	40	1000	40,000
Kokomo	2014	8	60'	5	40	1500	60,000
Anderson	2541	8	50'	5	40	1500	60,000
Marion	1392	8	50'	5	40	1500	60,000

and students. The parents and fans are happy because night ball affords them a better opportunity to attend home games or to follow their favorite team out of town.

Only in a few scattered cities have there been cases of misconduct associated with night football. And this sort of trouble is rapidly being eliminated, thanks to the cooperation of local police departments and to the provision of adequate school personnel.

The North Central Conference is one of the oldest leagues in the state. It has a membership of 10 teams: Technical of Indianapolis, Anderson, Richmond, New Castle, Muncie, Marion, Logansport, Kokomo, Frankfort, and Jefferson of Lafayette.

Night football has been regularly featured by most of these schools for 15 years or more. Today, all these schools play their full schedule on Friday nights. The average attendance at these games runs about 3,000.

The current emphasis is on improving facilities. Technical installed lights in 1949 at a cost of around \$12,000. Lafayette mounted 10 new 1500-watt lamps on each of its 10 original poles. The cost of this remodeling project came to \$8,000.

Muncie, which probably has the best lighted stadium in the state, has 18 lights mounted on each of eight 100' high poles, making a total of 144 lights which produce 32 candle power on the field.

Some of the schools with a total wattage of only 90,000 or less have indicated their intention of replacing their old lights with new modern lighting systems of 100,000 watts or more.

The accompanying table offers the vital statistics on the light installations of the North Central Conference.

TEXAS

By Roy M. Needham

Houston Independent School District

HIGH school football in Texas—embracing 890 schools—is played almost entirely at night! The trend started in the early '30s and was such a success that by the late '30s practically all the schools were playing their football at night.

About the only day games scheduled are the state play-offs, which start the first week of December. These are usually played on Saturday afternoons. But even some of these games are now being played at night.

Several factors prompted this tremendous swing toward night football:

1. Playing conditions are more favorable at night. Much of September, October, and November is hot during the day but pleasantly cool during the evening.

2. There's less disruption of school programs for Friday night games. The site of the game can usually be reached by students and players after school hours.

3. Parents can attend the games with their youngsters without loss of working time.

4. Gate receipts are much higher for night games. Adults who work during the day have the opportunity to attend at night.

5. Competition from college football and from radio and TV broadcasts of college games is minimized.

All high school football in the Lone Star State is played under the sponsorship of the University Interscholastic League. The schools are slotted into conferences according to their enrollment. There are six of these conferences, one of which is confined to the six-man game.

The six Houston schools are in the 4A (largest) Conference and play all their home games in a central athletic stadium on Thursday, Friday, and Saturday nights. Next year (1955) we'll have eight teams in the district and will play all home games in two stadiums (on Thursday and Friday nights only).

Since we don't play any day games, we haven't any specific data for comparison of gate receipts. We definitely believe, however, that night games will outdraw day affairs. Even if they didn't, I believe we'd still play night ball because of the other advantages it affords.

Mr. Needham's thoughts are solidly confirmed by Nat Williams, Superintendent of Schools in Lubbock, Tex.—a 4A powerhouse in District 1. Mr. Needham states that "Night football has been the practice for early season

(Continued on page 66)



NOW! The "Twins of the Majors" are NCAA "OFFICIAL," too!

These "Twins of the Majors" have gained greater recognition than ever!

The NCAA has voted the Spalding baseball *OFFICIAL* for the National Collegiate Baseball Tournament, scheduled for June 10-14 in Omaha, Nebraska.

This is the same great ball that has been official in the National League for 77 years!

It's a real champion . . . like its twin, the Spalding-made *Reach* ball, official with the

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These are the *best* baseballs made. And, they've proved it by remaining the *only* official baseballs of the National and American Leagues.

Are you using them? You should be . . . for your teams play their best when their equipment is the best. AND, THE BEST BY FAR, is SPALDING!

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NEW EQUIPMENT

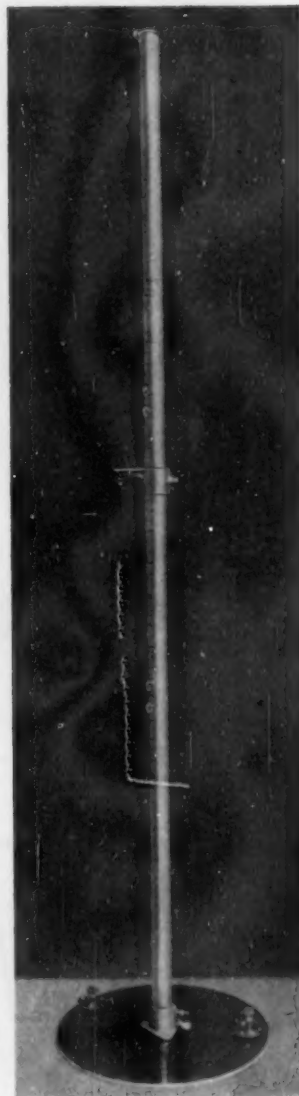
For complete details on any of the products shown on this page, check the corresponding listings on the inside of the flap on the back cover.

• **ANKLE WRAP.** First completely adjustable ankle wrap on market, "Titewrap" can be donned in less than 20 sec., wears comfortably, and lasts for full season. Constructed of heavy, webbed, rubber-filled, washable materials. Comes in three sizes. Developed by C and A Osteo Co.

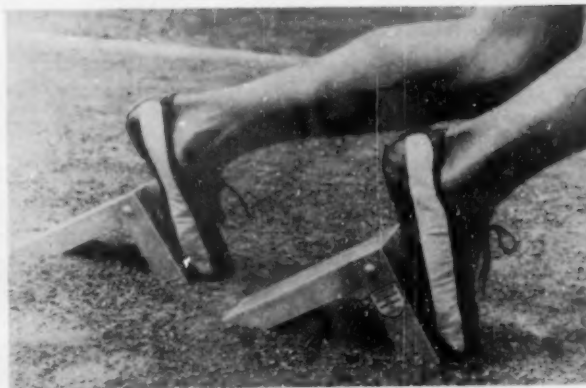
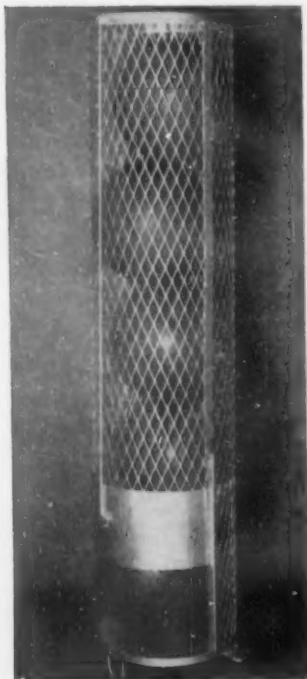


• **STEEL CHAIN NET.** The Jayfro Athletic Supply Co.'s steel chain basketball net will fit all models of Little Kid Basketball scaled-to-size goals. Can be used indoors and outdoors and is guaranteed for three years. Eliminates wear and tear and replacement problems.

• **COMBINATION STANDARD.** This all-aluminum standard, developed by Singleton & Yutzler Co., can be used indoors or outdoors for volleyball, badminton, tennis, paddle tennis, and high jump. Features: 8' high, pipe 1 1/2" heavy duty aluminum, high jump markings permanently engraved into pipe graduated in inches from 2' to 6', crossbar slide made of tempered cast aluminum, etc.

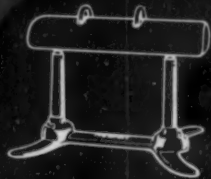


• **BALL DISPENSER.** An ideal device for storing basketballs and dispensing them (one or more, as desired) to gym classes and varsity practices or games, the Wiemer Dispensing Co.'s latest device accommodates five balls. It's built of 14 gauge meshed steel, 50" high, weighs 20 pounds, and is equipped with rollers to facilitate portability. Physical education instructors and coaches will find it an exceedingly helpful and time-saving device, perfect for both varsity and gym class use.

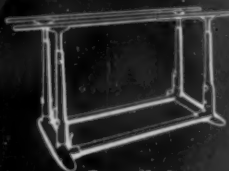


• **ALUMINUM STARTING BLOCKS.** The Aluminum Athletic Equipment Co.'s aluminum jet blocks anchor in cinder or board tracks simply by foot pressure. No spikes, screws, hammer, or replacements are required. The runner is kept low automatically and is catapulted forward with great thrust. Tests prove that inertia is overcome sooner and maximum speed is attained quicker than ever before with this new concept in starting.

Finest GYM APPARATUS *Anywhere!*



Side Horse



Parallel Bars



Pond - Medart
Twisting Belt

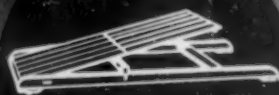


Medart

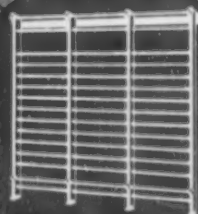


Flying Rings

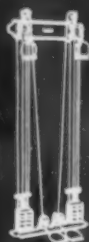
The Standard by which all other gym apparatus is judged — preferred above all others.



Springboard



Stall Bars



Pulley Weights

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Remember that the men on your squad can only play as well as they feel. A winning team is a healthy team. Therefore, it is essential for you to know that:

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That's right. An extensive test, conducted by Lloyd Percival, Director and Head Coach at Sports College, Toronto, Canada, showed that the use of Cyclotherapy actually reduced the recovery time by as much as 100 per cent.

In addition, it was determined that

Cyclotherapy serves:

as a relaxing agent in pre-game
nervous and muscular tension
as a sleep inducing agent in tense,
apprehensive men
as an aid in recovery from fatigue
due to muscular activity

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NIAGARA MFG. & DIST. CORP.

When Coach Lloyd Percival recently undertook a research program to test the effectiveness of Cyclotherapy on athletes, he concluded the following:

"We have found that contact bruise injuries of all types (especially the well known Charley Horse) react very favorably to the use of Cyclotherapy. In many cases we found that the use of this equipment cut down the time of recovery—sometimes as much as 100 per cent. There appears to be no doubt that Cyclotherapy stimulates the circulation very effectively and thus aids the normal healing processes.

"In using the equipment in the treatment of "Shin Splints"—a notoriously difficult condition to cure—we can report exceptionally good results. So far in our experience we have not used a technique that has such quick acting results.

"In the treatment of strains and sprains we have found that the use of Cyclotherapy does a great deal to hasten the healing process. It was particularly noticeable that the muscle spasms and tension usually associated with these injuries was relaxed very quickly by the use of this equipment."

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UTILITY UNIT "B"

Designed as a soft, flexible unit for application of Cyclotherapy to larger particular areas of body, such as back, chest or abdomen.

GET THE BOYS BACK IN THE GAME WITH Cyclotherapy

By JOHN D. SHOUSE

Purchase of Football Equipment

TABLE 1
PERSONS WHO PURCHASE ATHLETIC SUPPLIES

	CLASS AA		CLASS A		CLASS B		
	No.	%	No.	%	No.	%	Total
Athletic Dir.	8	24.24	6	8.22	20	10.75	34
Supt. Alone	0	.00	1	1.37	3	1.61	4
Prin. Alone	0	.00	0	.00	1	.54	1
Coach of Sport	22	66.67	30	41.09	53	28.49	105
Prin. & Coach	5	15.15	22	30.14	60	32.27	87
Supt. & Coach	0	.00	17	23.29	50	26.88	67
Ath. Dir. & Supt.	1	3.03	0	.00	0	.00	1
Dir. Ath. Equip.	1	3.03	0	.00	0	.00	1
Sch. Bd. & Coach	1	3.03	1	1.37	1	.54	3
Coach, Supt., Prin.	0	.00	0	.00	1	.54	1
Approval of Supt.	0	.00	0	.00	1	.54	1
Ath. Dir. & Coach	0	.00	0	.00	1	.54	1
School Board	0	.00	0	.00	1	.54	1
Did not answer	0	.00	1	1.37	0	.00	1
Total	38	115.15	78	106.85	192	103.24	292

TABLE 2
SEASONS FOR PURCHASING EQUIPMENT

	CLASS AA		CLASS A		CLASS B	
	No.	%	No.	%	No.	%
Winter	14	42.42	29	39.73	36	19.35
Spring	17	51.50	39	53.42	99	53.23
Summer	0	.00	1	1.37	18	9.68
Fall	1	3.03	4	5.48	30	16.13
No answer	1	3.03	0	.00	3	1.61
Total	33	100.00	73	100.00	186	100.00

TABLE 3
BIGGEST PROBLEM FACING COACHES

	CLASS AA		CLASS A		CLASS B	
	No.	%	No.	%	No.	%
Quality Selection	16	48.49	26	35.62	59	31.72
Budgeting	9	27.27	37	50.68	103	55.37
Where to Buy	0	.00	2	2.74	3	1.61
How Much to Buy	4	12.12	6	8.22	15	8.07
When to Buy	0	.00	1	1.37	3	1.61
No Problems	2	6.06	0	.00	1	.54
Did not answer	2	6.06	1	1.37	2	1.08
Total	33	100.00	73	100.00	186	100.00

FOOTBALL equipment represents the largest single item in the school athletic budget. In many schools, it comprises half the total budget. In others, it runs even more. But whatever the percentage, football definitely involves the greatest expenditure of money.

Since money is a scarce commodity in most schools, the purchasing agent must operate with the greatest circumspection. He must know how to buy, when to buy, what to buy, and where to buy. Only in this fashion will he be able to attain the desideratum—get the most for his money.

Unfortunately, this is easier said than done. It takes years and years of experience to learn the "ropes." And even then, the "ropes" are always coiling into nooses to trip the unwary.

In an effort to establish general criteria with regard to the how, when, what and where of football-equipment purchase, the writer undertook a survey of the 400 football-playing high schools of Kansas. These schools fell into three classifications: Class AA schools, 251 or more pupils; Class A schools, 151 to 250 pupils; and Class B schools, up to 150 pupils.

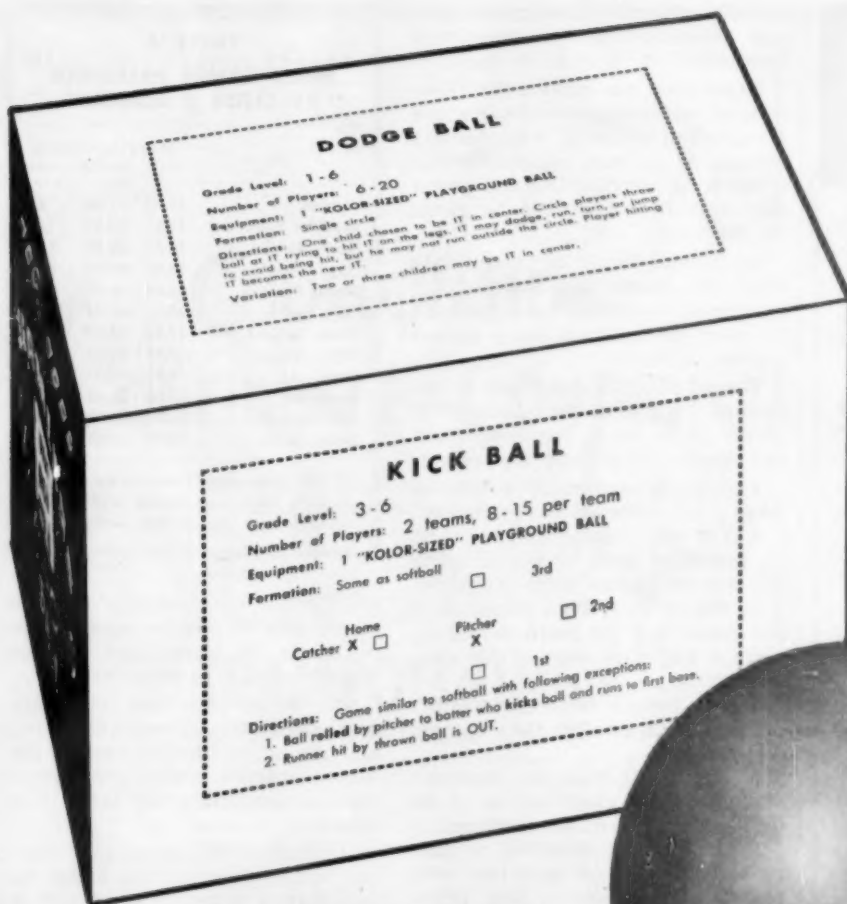
Specifically, the survey sought answers to the following questions:

1. Who does the purchasing of football equipment?
2. What are the procedures employed?
3. What guiding principles are observed?
4. What price range is observed for each piece of equipment?
5. What are the most important items?
6. What is the coach's biggest problem?

The survey revealed that the coach is usually the purchasing agent. The larger the school, the more apt is this to be true. (See Table 1.)

In some situations, the athletic director purchases directly from the sporting goods companies; and in others he purchases through the business manager. The coach can lighten his worries by systematizing the purchase of all equipment. The easiest way to save time and misunderstanding is to use purchase forms which record exactly what is ordered, its description, and date of order.

The purchase of athletic equipment should not be a haphazard af-



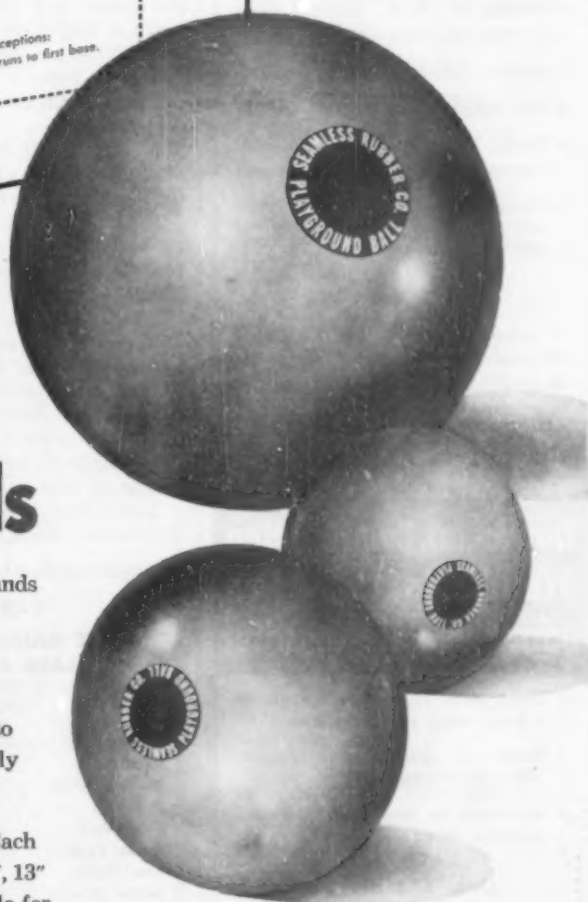
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fair. There should be a regular time and procedure for this important transaction.

Experience has shown that recognized sporting-goods dealers are the safest to deal with. They needn't necessarily be local merchants. But if the local merchandise and prices are "right," they should be given the business.

Equipment should be bought only after the needs are known. The equipment inventory will indicate the items on hand and those needed for next season.

The purchasing procedure is explained very aptly by Kenneth L. Meyer, in his book, *Purchase, Care, and Repair of Athletic Equipment*:

1. Some person must determine what is to be ordered and purchased.
2. The determining of what is to be purchased must be passed on to the one who is to place the order.
3. The order is then placed with the dealer, and the coach should receive a duplicate copy of his purchase order.

4. The invoice is received either prior to, with, or after the shipment of goods.

5. The goods must be received, examined, and approved as to the quantity and the quality ordered.

In general, it's desirable to purchase equipment on open bids with complete specifications and prices indicated for each item. Standard catalog descriptions or their equivalent should be used.

Some coaches do not plan when to buy. As a result, their last minute order often disregards the quality of the equipment. They'll accept almost anything in order to field their teams in time.

Just when to order is up to the individual coach. But above all, he

TABLE 5
PRICE RANGE PREFERRED
BY CLASS A COACHES

	Percent of Schools		
	High	Medium	Low
Helmets	84.72	15.28	.00
Shoulder Pads	49.31	50.69	.00
Hip Pads	28.77	68.49	2.74
Thigh Pads	34.25	60.27	5.48
Game Pants	43.84	46.57	9.59
Prac. Pants	20.55	67.12	12.33
Game Jerseys	52.05	42.47	5.48
Prac. Jerseys	19.18	63.01	17.81
Shoes	15.07	16.44	1.37
Footballs	78.08	20.55	.00
Ath. Support.	23.29	13.70	1.37
Sweat Socks	13.70	17.81	1.37

67.12% have boys furnish own shoes
61.64% have boys furnish supporters
67.12% have boys furnish socks

must order early enough to allow ample time to receive exactly what he wants. He should not overlook the advantages of early buying.

The writer feels that fall equipment should be ordered in the spring and spring equipment in the fall. When ordered early, you assure good workmanship and fewer mistakes.

Another advantage of early buying is that it gives the buyer the opportunity to return goods that do not meet specifications. It also aids the manufacturer in that it enables him to estimate the expected volume of business and prepare for it.

Table 2 indicates that all three classifications of schools do their largest percentage of purchasing in the spring and their next largest percentage in the winter.

Apparently, only in Class B are there many coaches who wait until summer or later to buy their football equipment. The reason for this may be that the Class B schools have much smaller orders than the larger schools and are thus more likely to receive their orders in time for the season.

Table 3 deals with what coaches feel is their biggest problem in the purchase of football equipment. All three classes of schools indicated that their biggest headache is either "quality selection" or "budgeting." The latter seems more important among the smaller schools.

The next thing the writer wanted to know was the price range that coaches kept in mind when purchasing equipment. Twelve items were listed and the coaches asked to check whether they purchased them in the high, medium, or low price range. The coaches were also asked to

TABLE 4
PRICE RANGE PREFERRED
BY CLASS AA COACHES

	Percent of Schools		
	High	Medium	Low
Helmets	93.94	6.06	.00
Shoulder Pads	78.79	21.21	.00
Hip Pads	63.64	36.36	.00
Thigh Pads	66.67	33.03	.00
Game Pants	45.46	48.48	6.06
Prac. Pants	12.50	81.25	6.25
Game Jerseys	51.52	42.42	6.06
Prac. Jerseys	21.22	69.69	9.09
Shoes	48.40	16.12	.00
Footballs	96.97	3.03	.00
Ath. Support.	50.00	18.76	.00
Sweat Socks	34.38	34.38	.00

35.48% have boys furnish own shoes
31.24% have boys furnish supporters
31.24% have boys furnish sweatsocks

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386/SP Lustrous Rayon Plait. Cord waist, elastic bottoms. All solid athletic colors to order. Sizes: S-M-L.....\$2.50 pr.

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check any items that the boys themselves were required to buy.

Table 4 discloses that the average Class AA coach buys the largest part of his equipment in the high price range, while Tables 5 and 6 reveal that the average Class A and Class B coach mostly resorts to the medium price range.

It's interesting to note that the larger the school, the higher the price range the average coach pays for his equipment.

Protective equipment is designed primarily to protect the bony regions of the body such as the hips, shoulders, knees, etc., and the writer believes that every athlete participating in a contact sport should be fully outfitted with the necessary protective devices.

In the questionnaire, the coaches were asked to check—in their order of importance—the factors considered when buying protective equipment. Seven factors were listed, namely: (1) cost of goods, (2) protection, (3) needs, (4) durability, (5) quality, (6) comfort, and (7) appearance.

The summary disclosed that all three classes of schools considered "protection" first in importance and "cost of goods" second in importance. The statistics were very conclusive in each group.

Non-protective equipment includes jerseys, pants, socks, T shirts, supporters, etc. As before, the coaches were asked to rate in order of importance the factors considered in the purchase of such equipment. The summary disclosed that all three types of schools considered "ability to be laundered" as the most important feature and "color schemes" next in importance.

These two factors outweighed all the others (quality, price, durability, appearance, etc.) pretty decisively.

The Kansas coaches were also asked to indicate whether they purchased all their football equipment from just one company. The summary revealed that of the responding AA coaches only 6.06% answered in the affirmative, while 87.87% answered no.

Of the Class A coaches who answered the questionnaire, 8.22% answered yes, while 91.78% answered no. Of the 184 responding B coaches, 13.99% said yes and 84.94% indicated no.

An ideal way of obtaining the lowest possible price for particular items is to purchase through bids. The survey showed that 30.30% of the AA coaches, 10.96% of the A coaches, and 5.38% of the B coaches purchase by bids—a rather poor showing for this type of purchasing.

TABLE 6

PRICE RANGE PREFERRED BY CLASS B COACHES

	Percent of Schools		
	High	Medium	Low
Helmets	65.27	33.70	1.09
Shoulder Pads	31.52	67.94	.54
Hip Pads	25.54	73.92	.54
Thigh Pads	27.16	72.30	.54
Game Pants	18.92	70.27	10.81
Prac. Pants	9.34	68.13	22.53
Game Jerseys	28.26	64.67	7.07
Prac. Jerseys	8.70	65.75	19.03
Shoes	13.53	20.18	.54
Footballs	71.89	27.03	.54
Ath. Support.	21.74	20.65	1.09
Sweat Socks	16.30	23.37	1.63

65.75% have boys furnish own shoes

56.52% have boys furnish supporters

58.70% have boys furnish socks

6.52% have boys furnish prac. jerseys

It would seem that the larger the school, the more purchasing is done by submitted bids. Yet over nine out of ten coaches do not ask for bids.

When a coach orders, he should know precisely what he needs and what he wants. He should be specific in his orders and he should expect the items shipped to him to conform exactly to specification.

In an effort to determine how much attention is paid to these details, the questionnaire asked the coaches whether their contracts include such terms as "such as" or "equal to" or other expressions which allow the supplier to substitute materials in filling their orders.

The summary showed that 12.12% of the AA coaches, 4.11% of the A men, and 4.84% of the B schools do include such terms which enable the dealer to make substitutions. The overwhelming majority do not give the dealer such leeway.

Model H. S. Plant

(Continued from page 14)

The pool, built of cement and painted, measures 36 by 75 feet and has six lanes, which complies with requirements for swimming meets. The depth of pool ranges from three to eight feet, and has a one-meter diving board at the deep end of the pool.

Thermo-pane plate glass windows covering the whole east side of the pool area admit the natural light, while under-water lighting adds to the beauty of the pool. Eight spotlights are available in addition to usual lights in the pool area.

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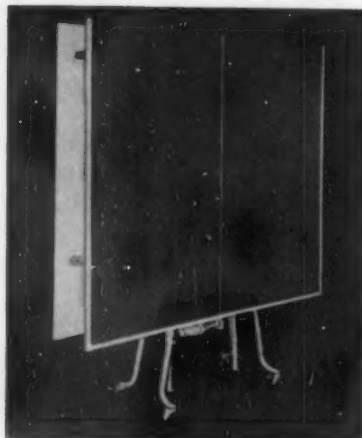
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NEW EQUIPMENT

For complete details on any of the products shown on this page, check the corresponding listings on the inside of the flap on the back cover.



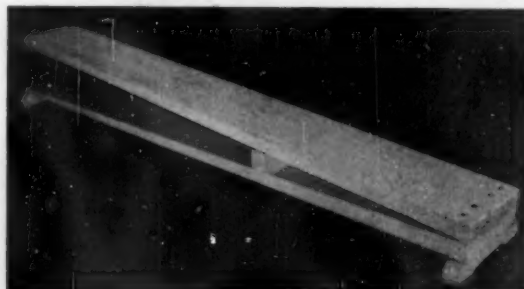
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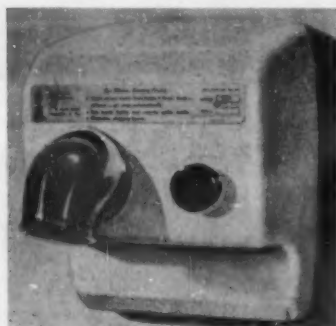


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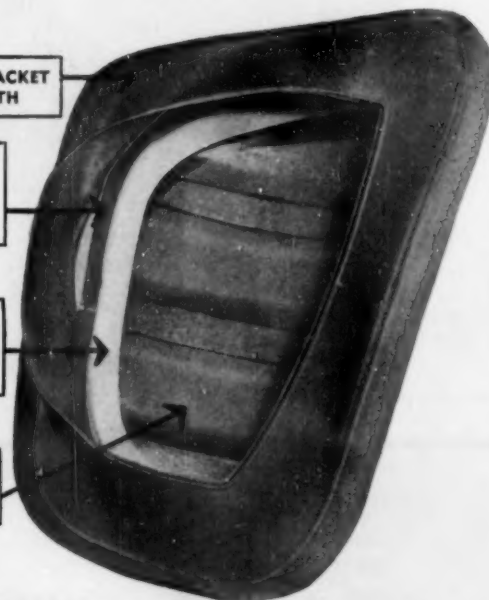


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The Tape Recorder As a Coaching Aid

By **QUINN CONSTANTZ**

Western Carolina College, Cullowhee, N. C.

COACHING is a highly scientific, competitive profession necessitating the latest methods, techniques, equipment, and facilities. Coaches who fail to avail themselves of every modern resource can hardly expect to keep up with the "pack."

With so many duties to perform, the average coach is always pressed for time. His main problem is how to best utilize every minute of available time.

There are several ways to accomplish this—(1) by thorough organization of the staff, (2) by development of a set routine, and (3) by employment of labor-saving devices.

Perhaps the most modern of the labor-saving devices is the tape recorder. Every coach will find it a highly practical, tremendously useful, exceptionally enjoyable device. Its uses are limited only by its owner's ingenuity.

The type of tape recorder you want depends on the use you intend to make of it. Most coaches will want one that can be carried around fairly easily, can accommodate a lot of recording on a spool, has a good motor for rapid skipping and rewinding, has simple controls, can utilize attachments for adaptability, and will reproduce the voice distinctly.

All else being equal, the faster the tape turns the more faithful the reproduction of the sound. However, for voice recording 1 7/8" per second (IPS) is adequate.

The largest practical reel is the 7" reel with 1200' of tape. The large reel turning at 1 7/8 IPS will record for two hours on one side. Some machines record on both sides and therefore will hold four hours of recording. Recently a new thin tape has been developed that will even beat that for playing time.

The fast rewind and fast forward motion are necessary to get to specific parts of the tape in a hurry.

Most hometype sets are easily

portable in that they can be carried about by the handle.

Adaptable sets would include provisions for attaching to other electronic devices such as radio, phonograph, sound projector, or public address system for pick-up. If the set is used in conjunction with a public address system, the output wattage isn't an item. If used alone, however, it should be strong enough to carry sound where it will be used.

The cost again depends upon many factors—new and used machine, purchased retail or wholesale and willingness to pay for extras. The cost of tape deserves about the same consideration. Used tapes and used machines are no gamble. They're similar to radios in their ease of operation, maintenance, care, and deterioration.

PRACTICAL USES

Dictation. Tape recorders are extremely satisfactory as dictating machines and are much cheaper. Some recorders have a key allowing an instant start and stop that makes dictation easier than the conventional models without it. A typist can pick up the letters or memos at his or her convenience.

In addition, a foot control allows direct typing with no need of short or long hand note taking.

Speeches. Coaches have many speeches to make during the year, and the tape recorder can be a great help in this respect. With it, they can practice their speech and improve on diction, emphasis, phrasing, and other important factors.

Film commentary. Films are shown many times with a running commentary. If these commentaries were placed on tape, it would save the coach time and relieve him of boredom.

Recorded radio programs. More and more schools are turning to the radio for publicity and to interpret the athletic program to the community. When it isn't convenient to

(Concluded on page 50)



Tops

Because they're
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for Speed

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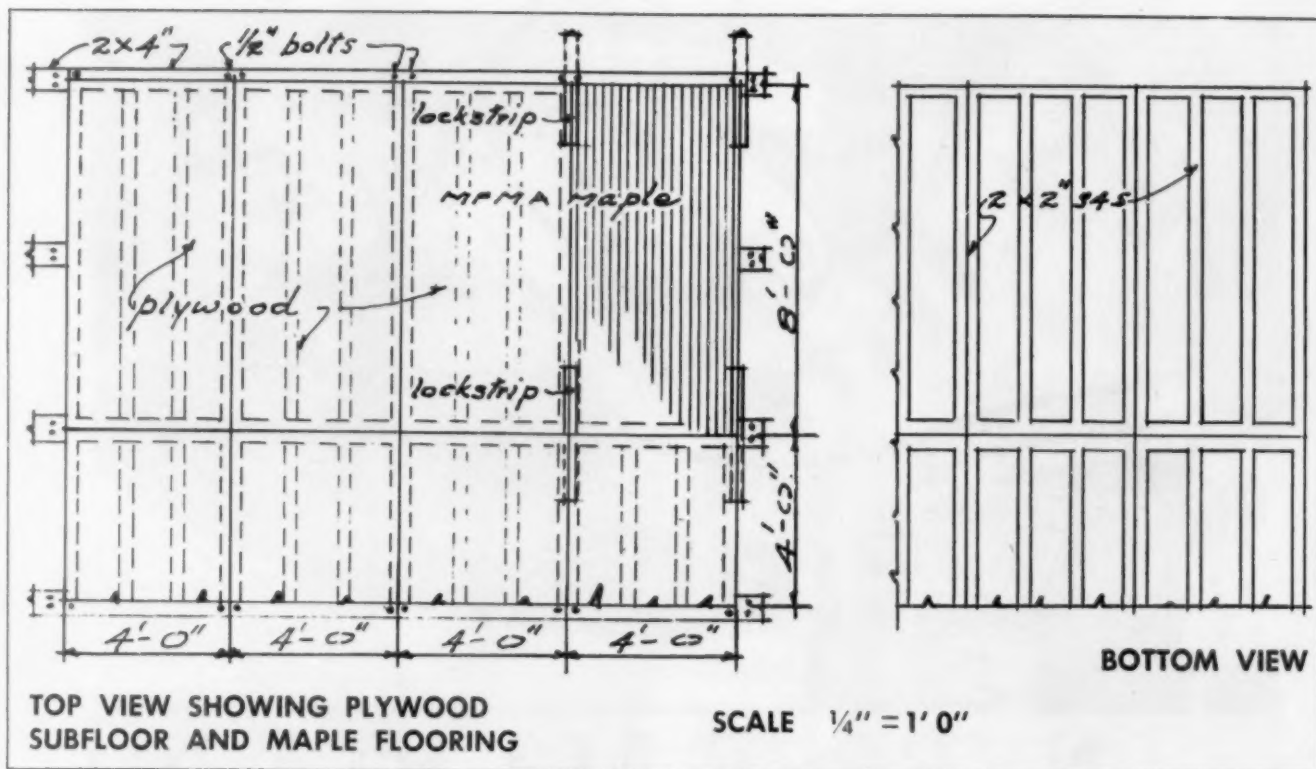
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CONVERSE

Chuck Taylor

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BASKETBALL SHOES

CONVERSE RUBBER COMPANY, MALDEN 48, MASS



A Portable Basketball Floor

TECHNICAL specifications for building structurally sound portable floors have been developed by the Maple Flooring Manufacturers Association. Properly built, these floors have many uses. They provide an excellent surface for basketball, gym work, dancing, roller skating, etc.—when installed either over the present floor or over a lawn or other outdoor area.

The following suggested specification is one type of sectional floor which may be set in place in a short time:

The surface or bearings upon which the portable sections are to rest must be level and free of un-

dulations to assure a level finish floor and eliminate unevenness of panels. When the portable sections are to be installed outside with no protection from the elements, the entire area when assembled should pitch enough in one direction to insure surface drainage.

In either case, the wood members, sub-floor, and finish flooring, should be treated with an approved moisture repellent or surface sealer. When the portable floor is not protected with a roof and side enclosures, we recommend that the floor surface be covered with a waterproof covering when not in use. Provide air space between the floor

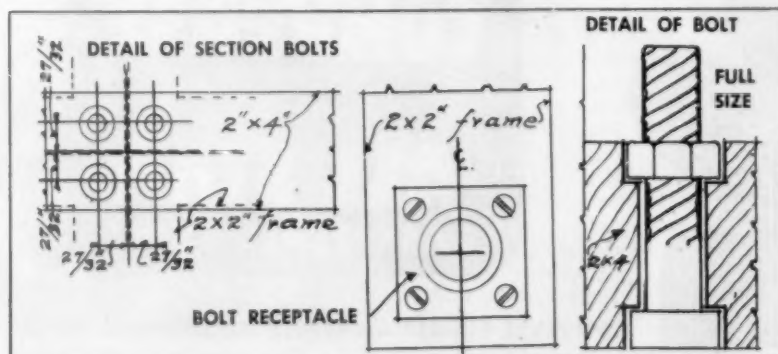
and waterproof covering to retard sweating and condensation.

Provision for proper storage of the floor sections must be made to avoid distortion of their shape. It is suggested that the supporting members be placed flat on one truck or platform, the panels or sections laid flat upon another, and stored in a space having temperature control and ventilation.

Construction of the portable sections and supports should be as follows: Supports to be of 2 x 4s S4S (unanchored) pine, fir or hemlock, laid flat. Stock must be free of crowns and kinks and square cut at ends for correct alignment. Stock shall be of 8' lengths, with butting joint in center of sections.

At each end of the 2 x 4 and 4' from the end (where sections meet), install 4 bolts of 1/2" diameter and 2 1/4" long, as shown in the detail drawing. Head and nut of the bolt are to be recessed into the 2 x 4s at top and bottom. Center line of bolts shall be 27/32" from center line of 2 x 4s, as shown in the details, one bolt to be placed on each side of center line.

Where both side and ends of four sections rest on the 2 x 4 at a given



"This floor has served us well for 20 years"



says **Coach Lloyd Skor**

Director of Athletics, Helena, Mont., High School

His Crimson Bengals have a long tradition of great basketball. In the 1952-53 season, Helena High was Class A State Champion, Big 16 Conference Champion, Northern Division Champion and Winner of the Butte Round Table Tournament.



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the new Helena gym
will be floored with

"foot-friendly"

**NORTHERN
HARD MAPLE**

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or write for file
textbook folder.



Coach Skor's forthright preference for Northern Hard Maple floors is seconded, almost unanimously, by other coaches questioned in all parts of the country.

These experienced men are alert to every factor that affects either *the game* or *the player*. They prefer Maple because:

Maple is resilient; it has a "live" feel under foot, rather than a "dead," unyielding feel. It is bright, cheerful, splinter-free. Painted court lines contrast well—a big help to players' vital peripheral vision.

Its tight-grained surface repels dirt; its smoothness minimizes floor-burn; hence, less likelihood of infection.

Maple endures. The 20-year-old floor pictured is a fine example. Maintenance is easy. Refinishing is simple (there's always a new floor underneath").

Today's labor costs assuredly point the wisdom of specifying such *once-and-for-all* materials as Northern Hard Maple. And strictly-enforced MFMA grading regulations assure you that flooring which bears the MFMA mill-mark is *true* Northern Hard Maple, *truly* dimensioned, *truly* graded, *truly* seasoned. Specify it with the confidence it deserves.

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BEECH AND BIRCH



AMATEUR and professional photographers are now using the single electronic flash as a basic part of their equipment. A compact unit, easily carried, and long-lived, it produces intense brief lighting and is immediately ready for action. This kind of equipment is easily attainable.

At M.I.T., two types of single electronic flash have been used. The coach attaches the lamp directly to the camera, just as in the flash bulb arrangement. A small portable wet battery, weighing about four or five pounds, is slung over the shoulder and supplies all the juice needed. The Polaroid Land camera is used for on-the-spot prints.

When conditions demand a stronger flash, a larger flash tube and reflector are set up on a stand and regular electric line power is used. This means that the athlete must perform at the spot where the equipment is set up.

The stroboscope, or *repeating* electronic flash, is used extensively in industry, education, and governmental research for the armed forces. Its function is to slow down or to stop the motion of fast moving objects.

The ability to stop the flight of a bullet, that is, to record it photographically and determine its speed, is easily accomplished via the stroboscope. Timing devices in the automotive field use the strob light as

a basis for their measurements.

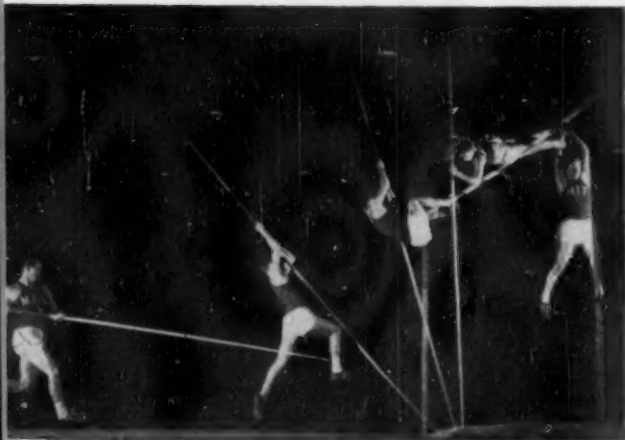
Why not apply stroboscopy to the study and analysis of sports? Here is its background as a teaching aid for coach and athlete at M.I.T.

Dr. Harold E. Edgerton, Professor of Electrical Measurement at M.I.T., is the inventor of the flash tube and the developer of stroboscopic techniques. He has spent many a night in Rockwell Cage, the M.I.T. Swimming Pool, and Boston Garden with all equipment in tow.

The multiple-flash photos presented for scrutiny in this article were taken with repeating flash, which stopped body movement in an exercise or event at progressive intervals on the same negative. This gave a composite study of the whole movement. In most instances, the briefness of each flash was $1/10,000$ of a second, much faster than actually needed to halt the motion in the event.

What was the purpose of taking these pictures? From the coaches' point of view, the pictures afford a glimpse of the individual as he actually performs. They help ascertain

COACHING by STROBOSCOPE



the correctness of the individual's form, application of basic fundamentals in proper sequence, and—where study has been carried far enough—determine what are the basic fundamentals and where proper emphasis may be placed. The pictures bring understanding where words elicit blank faces.

A mistake can be found at its source with the strob, and corrective measures attempted. The untrained eye sees the magnification of an error somewhere beyond its cause, and endless hours may be spent trying to correct the effect with the wrong emphasis. Easily remedial mistakes stand out on the stroboscopic print which are completely overlooked time and again during the familiarity of normal routine.

The pictures have also proven their worth as a motivator, or psychological device, for keeping athletes interested in improving themselves and working harder to do just that. Beginners have been induced to try things which may have completely escaped their attention otherwise.

With the strob, nothing need be posed. A true look may be had of body motion under the strain of competition, and not set up as a coach may believe it should be.

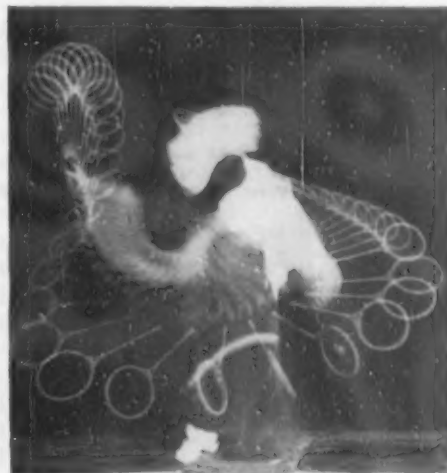
The strob has an advantage over regular motion picture study. With movie technique, it takes time, room, equipment, and continual playbacks to study, say, a vaulter in action. The strob, on the other hand, supplies the coach with a print of a half dozen progressive images from takeoff through release. The advantages of this compactness are readily discernible.

The main emphasis at M.I.T. so far has been on vaulting—of obtaining as many shots of both champions and beginners as possible. This has given us a good indication of how to organize for the shooting of other events.

When taking pictures in the M.I.T. Cage, Dr. Edgerton was able to set conditions more nearly as he liked for the best multi-flash pictures. He operated in semi-darkness at times to afford more and cleaner images. Although his camera shutter was

synchronized with the light flashes, other photographers simply positioned their cameras, opened the shutter before the first flash, and closed it after the series. These pictures showed good results in black and white as well as color.

The conditions of external light were also regulated when shooting at the M.I.T. Swimming Pool. However, when strobing in public, no set conditions were possible. When operating at the indoor track meets at Boston Garden over the past six years, the pole vaulting pictures were not as clear or contrasted as those taken in Rockwell Cage, but



By ARNE U. ARNESEN

Assistant Track Coach, M. I. T.

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certainly good enough to fill the bill from the coaching angle. A good background, of course, makes the difference, especially with controlled lighting.

Developing and printing of stroboscopic shots may be carried on through regular processing. They may be developed at home, by a favorite company, or taken to the corner drug store.

The pictures to be used for study were taken on a 90° component; from straight on, directly behind, or from either side. Other spectacular angles can be deceiving with respect to the actual path of the body and the position of the appendages in relation to a bar or other stationary objects.

With set conditions, an open shutter can be used for single or multi-flash shots. However, for daylight or well-lighted areas at night, the only camera prerequisite is an X type shutter to be attached to the triggering device for synchronization, to shut out unwanted light and avoid overexposure. The X type shutter setting is instantaneous, whereas the M type is delayed to record the peak light for the slower conventional flash bulb.

If M type shutter setting were used with the electronic flash, nothing would be recorded as the shutter would open after the brief flash had taken place. A delay mechanism can be attached for single flash pictures with the slower shutter.

Aside from the camera and stand, the basic equipment for strobing consists of the timing unit to trigger the shutter and flash, the electronic gas tube or lamp, and the power storage and supply.

When using two lamps for lighting purposes in the M.I.T. Cage, Dr. Edgerton has a photocell attached to the secondary lamp for synchronization with the primary. This arrangement keeps the lamp independent of excess wiring and equipment.

The power supply feeds the capacitor which stores up the charge initiated from a regular electric line plug-in socket. The initial voltage is stepped up through a transformer and rectifier en route to the capacitor.

When the gas-filled flash tube is hit by the stored charge from the capacitor, the ionization of the gas (usually xenon) transforms the energy into the visible spectrum and an instantaneous flash. The intensity of the light, of course, depends upon the stored charge available from the capacitor.

This charge cannot be used in greater quantity than the power handling capabilities of the tube. The flash may be repeated 5, 10,

20, 60, or more times per second depending upon the amount of light needed per flash for the activity being shot. The flash may be fired by hand or set automatically in timed series. The time of the flash itself and the interval between flashes can be precisely controlled.

What are some of the future possibilities of stroboscopy as applied to sports? It may record the exact measurements in time, distance, and speed and acceleration of the moving body and appendages, or the objects used in the activity. Individual form, basic fundamentals, and mechanical analysis may be studied to a degree heretofore impossible.

With what force does the shot leave the hand, and at what angle? With the same amount of force available, what angle is the best for greater distance? The latter is known. If a shot-putter loses distance at the 45° angle, the strob can help determine at which angle the individual gets his best put, and perhaps work into a form which will apply his greatest force at the 45° angle.

If 20 to 30 timed exposures were taken of a vaulter, what information could be gleaned from the compact print? Trace the center of weight of the body, determine the scale of acceleration and deceleration of the body, and determine the same for the pole.

It may be possible to check existing figures for certain events and go on to set up new figures for other activities.

In 1949, Conrad Rehling presented a Master's thesis at Springfield College in which the stroboscopic technique was applied to the drive in golf.¹ The pictures were taken through the facilities of the A. G. Spalding Bros. of Chicopee, Mass.

With new, improved, and more compact strobing equipment becoming available and more individuals building their own single flash equipment, there's no reason why sports cannot enjoy the fruits of this method of photography.

In his new edition of *Flash*, Dr. Edgerton has presented a comprehensive listing of producers of tubes and equipment the world over, as well as an explanation of the theory of electronic flash lighting.²

The book itself gives a picture coverage of many inconceivable happenings in our daily living which the eye misses. It's very spectacular and interesting to technician and layman alike.

It should not be necessary for each coach or each school to wait until stroboscopy becomes an everyday affair, such as the movie, and
(Concluded on page 63)

Four rooms or one... as easy as 1-2-3



Three R-W Deluxe FoldeR-Way Partitions in the Riverside-Brookfield High School, Riverside, Illinois permit completely integrated use of floor space. Partitions make possible two small gyms; one large gym; auditorium; and swimming pool with area for spectators. Schmidt, Garden & Erikson—Architects.

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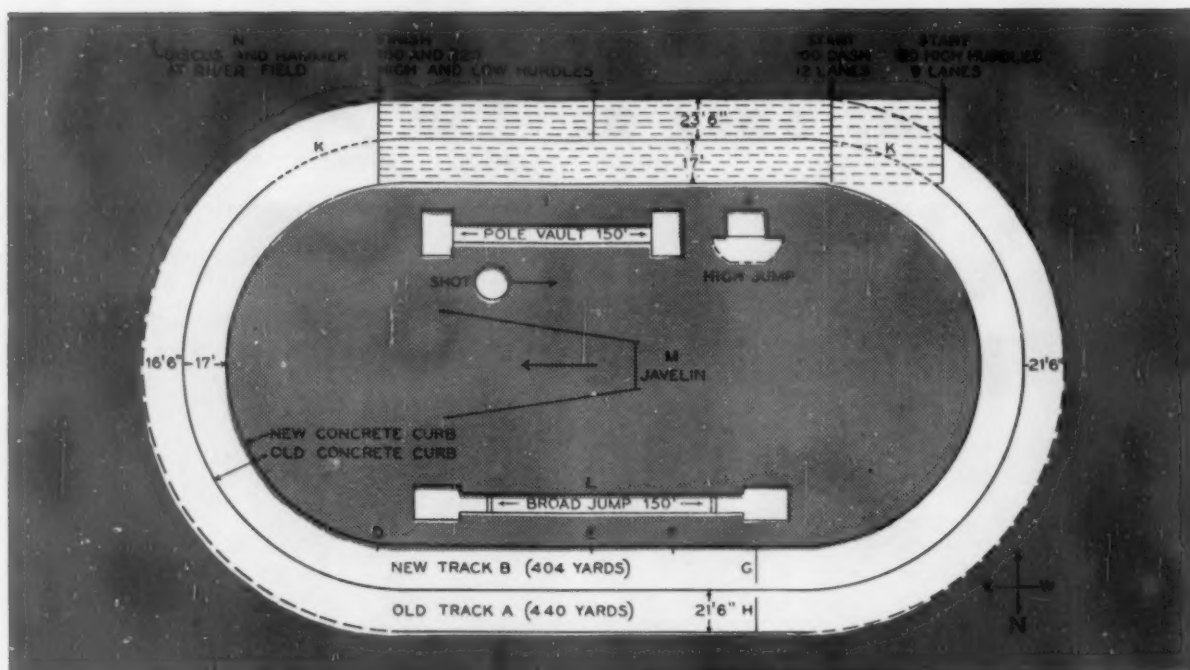
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Track A—Original 440 yard track, newly resurfaced with same materials as new track, width as shown.

Track B—New 404 track, 17' wide, permitting 6 lanes of 32".

C—Track A only, start and finish 880, mile, two mile.

D—Track B only, start 880 yards relay.

E—Track B only, start 440 yard relay.

F—Track B, start 220, 220 hurdles, 440 in lanes around curve.

G—Track B only, finish 440 and 880 relays.

H—Track A only, start and finish of all relays beyond 880 yards in length, no lanes.

I—Pole vault runway of loam and cinders, 150' run, two pits.

J—High jump runway of clay loam, 25 feet radius.

K—Wooden curb, removable for 100 and high hurdles.

L—Broad jump runway of loam and cinders, 150' run, two pits.

M—Javelin, grass runway.

N—Discus and hammer will be held on River Field.

The Dual Franklin Field Track

THE new track facilities on Franklin Field give the University of Pennsylvania one of the finest track and field lay-outs in the world for both contestants and spectators. The improvements consist primarily of a new track (called Track B above) 17' wide laid on the inside of the old 440 yard track (called Track A above), which varied in width from 16', 6" to 23' 6".

The new track, of course, measures less than a quarter mile, thus necessitating the maintenance of the old curb and the old 440-yard oval. With temporary wooden curbs (see K above) in place on the S.E. and S.W. curves, we actually have two tracks which, for example, can be used in the 440 yard relay to permit as many as 10 teams to run comfortably in one heat.

With the temporary curbs removed, it will be possible to run six 100-yard dash lanes on the new track alone, all of which will be out away from the stadium wall which has been such a handicap to spectators in the past. Or if preferred, as many as 12 lanes can be run, using both the new and the old tracks.

Present plans call for all races around the track

(except the 440 and 880 yard relays) to be run on the old 440-yard track as in the past. The old starting and finish lines will not be changed. However, the new track presents the possibility of running the first 220-yards of various relay races in staggered lanes on both tracks, thus eliminating the crowding of runners which has occasionally occurred at the N.W. curve. If this proves practical, certain races will be run in this fashion.

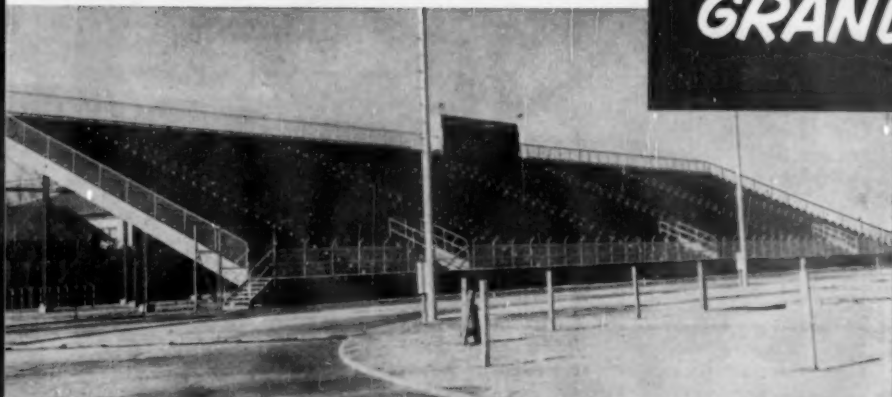
New runways and pits have been constructed for the high jump, pole vault, and broad jump, with improved surfaces and greatly improved vision for spectators. The high jump for example is now at the S.W. corner near the start of the 100-yard dash.

Additional advantages will be present for other meets. All events will start and finish in front of the spectators. The 440 can be run in 12 staggered lanes around either one or two curves. The 220-yard low hurdles can be run around one curve in 9 staggered lanes if so desired.

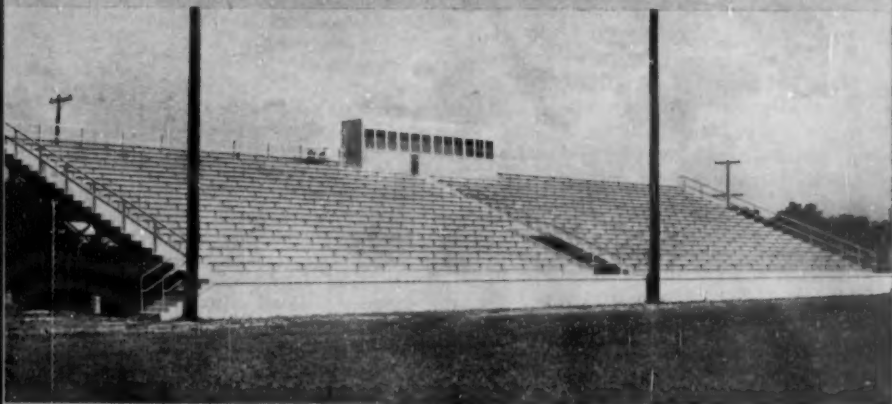
In summary: Pennsylvania now possesses outdoor track facilities which permit an even greater Relay Carnival as well as any of the other great sectional and national track championships.

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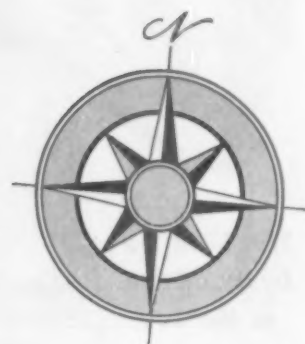
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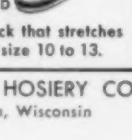
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CUSHION FOOT



SAFETY IN BASEBALL

By FRANK WIECHEC

Trainer, Philadelphia Phillies

COMPARED to such bruising sports as football, ice hockey, and lacrosse, baseball may not be thought of as a "tough" sport. But it really is. A game that demands sudden bursts of energy, split-second timing, and quick, finely coordinated movements, it can prove just as disabling a sport as any of the others.

An apparently slight injury to the throwing muscle in the back, shoulder, or arm, or an injury to a joint or leg muscle may not be particularly painful but it can necessitate the removal of the player from the line-up.

Bobby Schantz, midget pitcher who won the 1952 American League most valuable player award, strained a throwing muscle in his shoulder. Though not incapacitating him physically, it practically put an end to his career.

Curt Simmons, the Phillies' southpaw ace, suffered an injury to the toe of his foot—and it wasn't until two months later that he was able to pitch and win a game.

Ted Williams injured his elbow in the early part of July and was lost to his team for the rest of the 1953 season.

The significant thing to remember is that all these injuries, occurring in any other sport, could have been supported and protected and the athlete returned to competition in very short order.

Since an ounce of prevention is worth several pounds of cure, the wise baseball coach will set up a safe and sane program embodying proper facilities, safe equipment, and intelligently planned practices. School teams can well follow the pattern set by major league teams in preventing accidents or injuries.

Certain hazards are involved in almost every phase of the game, and the following recommendations are offered as an aid in reducing accidents.

BATTER

1. Have a bat to your liking, of correct weight and grip. Some big leaguers use rosin or other sticky substances to prevent the bat from slipping out of their hands. Preliminary swings will loosen back and shoulder muscles and prevent strains.

2. When standing at the plate, be ready and alert. Leaning over or

crowding the play invites "dusters." (Pitches aimed at the head.)

3. Keep your eye on the ball from the moment it leaves the pitcher's hand.

4. Since many wild pitches come dangerously close to the head, most big leaguers wear a specially padded protective helmet inside the cap.

RUNNER

1. As a precautionary measure against a sliding accident, pick up dirt or pebbles and hold them in each hand. This practice will automatically close the fist and thus prevent sprains of the wrist or hand, jammed, or even stepped-upon fingers when sliding into base. (Richie Ashburn fractured three bones in his hand when diving into a bag. In 1950, Dick Sisler sprained his wrist while sliding into base, almost costing the Phillies the pennant.)

2. Slide properly with body relaxed and ankles and knees loose to avoid breaking a bone or tearing the tissues in a joint.

3. Don't dive into base head first; the chances of head injury are great. The opposing fielder may jam his knee into or kick your head, or he may fall upon or hit your head hard when making a tag.

4. Don't change direction while sliding nor change your mind about sliding once you start a slide. Monte Irvin fractured his leg when he changed his mind in the midst of a slide.

CATCHER

1. When catching a pitched ball, let the gloved hand lead the throwing hand. The fingers of the throwing hand should be bent under to prevent the ball from hitting the fingertips when tipped or deflected by the batter. Always keep your eye on the ball.

2. Before each game, study the surrounding area about the plate, noting any holes, obstructions, distance to the backstop and dugouts, location of people around you. There's no time to look around when chasing a fly ball.

3. Examine your safety equipment carefully before each game. Mask, shin guards, chest protector, glove should not be sat upon, thrown around, or folded over. Wear a metal jock supporter at all times behind the plate.

4. To avoid serious collisions, come to an understanding with the infielders on high fly balls around the plate.

The usual procedure is for either the first baseman or third baseman to go after the ball when hit high between the pitcher's mound and the plate. The catcher goes after balls hit behind the plate and on either side of the dug-outs.

5. On a sliding play, block the plate and make contact with the runner. "Ride the runner in" rather than meet the full force and weight of the slider. Be relaxed and "give" rather than resist.

PITCHER

1. After delivering the ball, fall into a fielding position immediately and bring your glove up in front of the face. Follow the course of the ball until it's either returned to you or out of the infield. Bubba Church was once struck over the eye by a terrific line drive from the bat of Ted Kluszewski. He was out of action for the rest of the year and almost lost the sight of his eye.

2. An alert pitcher strengthens the infield by being a fifth infielder. Through an understanding with the catcher, first and third basemen, cover the territory halfway between the mound and home plate, halfway between the mound and first base, and halfway between the mound and the third-base foul line except with men on second and third.

3. Never attempt to pitch from the mound unless prepared. Know how to protect yourself against line drives and collisions with teammates and opposing runners. Condition your shoulder, back, and arm muscles against overstretching and strain. Ditto the muscles of the legs and crotch. A well-conditioned pitcher never suffers a sore arm.

FIRST BASEMAN

1. Use care when making a play at the base. Placing the foot on top of the bag will invariably cause a serious spike wound or collision. Place the foot on the side of the bag instead of on top for put-outs. Pitcher Russ Meyer once crossed over the bag in front of the runner. As his foot was leaving the bag, the spikes of the runner caught the back of his heel. The resulting wound almost severed Meyer's heel cord, and he was lost for the rest of the season.

2. Move around fast, getting away from the bag as soon as the ball is received. Sometimes the runner has his head down and will run into a slow-moving fielder.

SECOND BASE, SHORTSTOP

1. On a double play ball, the runner from first frequently tries to break up the play by sliding into or somehow preventing the fielder from completing his throw to first base. Fielders like Jackie Robinson, Phil Rizzuto, Gran Hammer, Eddie Stanky, and Alvin Dark quickly get away from second base either by crossing the bag and pivoting to make the throw or by leaping high into the air, twisting and then throwing.

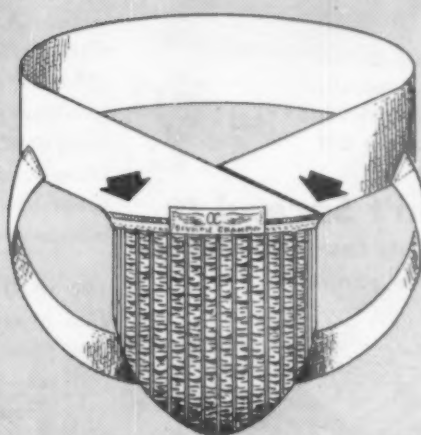
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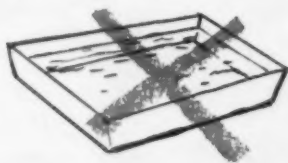
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2. When making a play on a stealing runner, straddle the bag and upon receiving the ball, drop the glove hand to the ground in front of the bag. The idea is to let the runner tag himself by sliding into the ball. Learn to vary your approach either by coming in from the side or leaping into the air and riding the slider after making the tag. If you approach the bag in the same manner on every play, the smart runner will know this and aim at your legs. Red Schoendienst makes a practice of leaping in the air after making his tag and falling on top of the slider.

3. When running out into short outfield for a fly ball, give definite signals with your arms (waving them up and down) and yelling at the same time. Many collisions have occurred between infielders and outfielders because the infielder gave no indication that he could catch the ball.

THIRD BASEMAN

1. Watch out for collisions with the catcher on foul fly balls, of running into an obstruction (wall, dugout, post, loose bat, or glove) when going after a foul ball, of getting knocked down and spiked when making a rundown of a base stealer. To prevent accidents, have an understanding with your catcher, the third base coach, and the dugout. Become acquainted with the area surrounding you, particularly all the hazards.

2. Line drives that were supposed to be bunts may frequently hit you, especially when you come in too close to the plate. Hard hit balls deflected close to you may strike you in the face. As a precaution, always be alert when coming in for a bunt. Assume a crouched position, glove up.

3. As a safety measure against deflected balls, all big league fielders are constantly smoothing the ground in front of them and picking up all loose stones and sticks. In major league ball, all infields must be dragged and smoothed out by the ground crew at the end of the fifth inning.

OUTFIELDER

Running into fences, obstructions (the big leagues require players to bring in their gloves every inning), holes, or collisions with other fielders are just a few of the hazards found in the outfield.

Pete Reiser collided so often with the fence in Ebbets Field that the management had to place huge sheets of foam rubber all around the outfield barriers. Ted Williams almost ruined his career when he suffered a fractured elbow, the result of a collision with a fence.

Being hit by a ball lost in the sun or glare of the floodlights is a not too infrequent occurrence. Mel Clark, of the Phillies, lost a ball in the sun. It hit him squarely in the mouth, loosening teeth and necessitating seventeen stitches. Sam Jethroe lost a ball in the sun and had four teeth knocked out.

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The outfielder must be acquainted with his surrounding, know the location of all obstructions, and have a definite set of signals with his teammates in the outfield and infield.

THE COACH

Coaches too play an important role in accident prevention. Their advice to and guidance of the inexperienced player will teach him safe practices and show him how to use safe equipment. They should organize practice sessions so that a maximum number of players can participate with a minimum of danger.

Examples of coach participation:

1. During batting practice, make certain that all players except the catcher and batter stand back of the screen or batting cage. Forbid all horse-play, allow no pitcher warm-up, pepper games, bull sessions, etc., along the sidelines. All these activities should be done in back of the batting cage or in the outfield. Also insist that all players on the playing field watch the batter.

2. When hitting balls to the infield and outfield during infield practice, do this between batting practice pitches. Do not allow other players to run across or congregate in the infield during batting practice.

3. Insist that the practice catcher have on all his safety equipment and that screens or barriers be placed on the mound and in front of the pitcher and first baseman to protect these men against foul tips or line drives.

4. During the game, the base coach can help prevent accidents by alerting the runner to the position of the ball and when to run and slide. He can also prevent fighting and help remove obstructions from the field.

5. Check on the conditioning and daily work of the players. Injury early in the season, especially to the throwing arm, may ruin the entire season for a player. Insist that all players warm up thoroughly before engaging in practice. They should loosen all muscles and joints, especially those involved in throwing and the back leg and crotch muscles of the thigh.

SAFETY EQUIPMENT

Sun Glasses should be worn by the outfielders and infielders with the exception of the first baseman. They are fastened to a rubber band worn around the head and are so constructed that they flip down over the eyes when the ball is lost in the sun. They may be fastened to the peak of the cap, but this is not as satisfactory a method of wearing them.

Skull Cap. Head protectors made of a light plastic material that fits inside a baseball cap are used generally by big league players. They're also required equipment in Little League Baseball. Many professional players have suffered serious injury after being struck in the head by a ball.

Sliding Pads are worn separately under baseball pants and cover the

(Continued on page 57)

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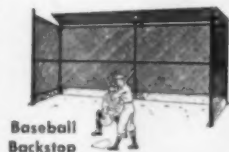
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The Tape Recorder in Coaching

(Continued from page 36)

go to the studio, recorded programs can be taped in advance either by the radio sports announcer or by a sports director at the school.

Game observations. Coaches in different sports use a tape recorder while a contest is in progress for comments that are replayed either in private or before the squad. This has been done in football, basketball, gymnastics, wrestling, and baseball, and could be utilized in other activities.

One coach had a radio station tape the play-by-play basketball broadcasts. He replayed this to the squad and made comments as the replayed game progressed.

The recording could be done by the coaching staff, if no one else can or will. Tapes can be reused as new broadcasts are made. When edited, the radio play-by-play can also be used in conjunction with films of the game.

Depending upon how much use the coach might make of it, the press-box-to-bench phone conversation could be monitored by a recorder and analyzed later for certain types of information.

Coaching clinics. Much valuable material presented at coaching clinics is lost because coaches either don't write fast enough or feel that they can remember most of it. Later on, they realize that not everything can be recalled. If most of the talks are taped, this valuable information can be studied and perhaps used. This includes the good jokes we always forget.

Film strips. There are many fine film strips showing fundamentals in a variety of sports. Some of them have accompanying recorded narration; others typed narrations.

If the slide is to be shown many times, the unrecorded narrations could be taped and thus save the coach time and relief from monotony. In addition, the coach could add comments not in the narration that he deems necessary.

Drill instructions. The vocal portion (directions by the leader) of warm-up exercises can be placed on the recorder and played over a public address system to large squads. Actually several different tapes can be made to vary the warm-up drills.

Practice instructions. During practice sessions, the particular maneu-

vers to be explained and demonstrated can be recorded in advance and then run over a public address hookup while the coach moves the men around for the demonstration. This will save shouting whenever there's a wind, a large group, or near-by noises.

Scouting. One of the best uses of a tape recorder is for scouting. If the scout can sit in a press box, the conventional machine will work fine. If he must sit in the stands and has an available electric outlet, he must muffle his voice to avoid disturbing other spectators or having their noise ruin the recording.

A handy way to muffle the voice is by a home-made voice muffler. A cigar box lined with felt or other absorbent material and with one end cut to fit around the mouth will serve the purpose. The microphone can be placed in it and no one will be bothered.

If no electric power is available, the conventional tape recorder won't work. Now on the market is a portable tape machine that runs by battery power. Used by radio people strictly for recording purposes, the tapes taken from it are played on a regular tape recorder.

This same recorder is handy in a car. While driving, many excellent ideas come to mind that escape the memory later. One cannot write and drive at the same time. However, one can talk and drive.

If you own the conventional recorder, rather than the battery powered model, you can purchase a converter that plugs into the cigarette lighter of the car to provide 110-volt current. Be sure, however, that it's large enough and not the electric shaver type. Most recorders pull around 100 watts and use a converter costing approximately \$25.

Track announcements. During invitational or conference relays, it's important to run on a rigid time schedule. All first, second, and last "call" announcements can be timed and placed on a tape. The recorder can then be hooked to the public address system. When turned on at the correct time, it can thus do all of the calling for the relays.

Besides its practical aspects, the tape recorder provides a lot of fun. It can be used for gym classes, physical education demonstrations, and any number of other purposes.

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By **GEOFFREY S. CORNISH**
Turfgrass Specialist, Amherst, Mass.

Turfing New Fields

SCHOOLS, colleges, and community recreation committees faced with the problem of establishing turf on brand new fields or on older ones to be plowed over and re-seeded often find it difficult to obtain information based on fact rather than opinion.

The twelve questions most frequently asked about new turf are listed hereunder with answers based upon practical experience of turfgrass specialists, architects, contractors, and committees who have carried out this type of work.

1. Is it advisable to plow over poor turf and re-seed?

It's often possible to convert shabby grass into beautiful turf by a program of fertilizing, liming, aeration, and mowing practices as described in detail by this writer in the January 1954 issue of *Scholastic Coach*.

This conversion can be accomplished at a fraction of the cost involved in new construction. Furthermore, after costly new construction the turf may be little better than on the old field because the cause of its poorness in the first place was inadequate maintenance rather than constructional defects.

Still there are instances when it's necessary to do a whole re-seeding job. Four common examples include fields where (a) the turf is more than 60% weeds, (b) there's less than 3 or 4 inches of topsoil, (c) extensive subdrainage is required, or (d) the surface is bumpy and uneven with inadequate pitch for surface drainage.

Even on these fields, however, it's often possible to salvage quantities of good sod, and by using one of

the new power cutters this sod can be stripped inexpensively and used to advantage on the new field.

2. Is it possible to establish new turf on old fields without putting them out of play for a season or more?

By seeding in late March or early April, the field may be ready for the football season if the summer is relatively cool and if adequate care, particularly in regard to watering and fertilizing, is given the young grass.

The new turf will be injured fairly extensively by the first season's play and considerable re-seeding will nearly always be required the following spring. The rate of development of turf in the Bermuda grass area of the South permits earlier opening than in the North.

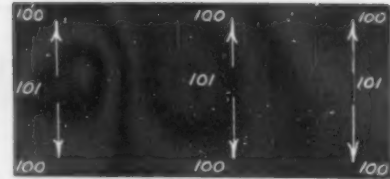
Fields turfed with sod can be opened in two or three months. Suitable sod is, however, expensive, although it's sometimes possible to obtain it at reasonable prices. For example, a golf course to be closed for a building development can be a source of ideal inexpensive sod.

Here's a program for a football field now being considered by a New England college to save cost of sod and avoid interruption of play.

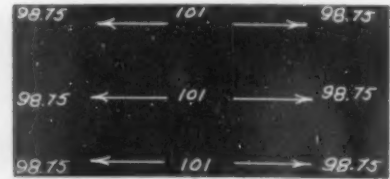
(a) In September 1955, a sod nursery will be established elsewhere on the grounds by seeding. Sufficient sod will be grown to turf the entire field allowing 25% for waste.

(b) Throughout 1956, the nursery will be carefully tended.

(c) In the spring of 1957 as soon as the ground can be worked, the field will be plowed and disced, top-



CENTER TO SIDES



CENTER TO ENDS



DIAGONAL

Three types of surface pitch, or grade, that are recommended for football fields.

soil and amendments will be added, grading completed, and a chemical applied to kill weed seeds in the soil.

(d) Four to six weeks later, the field will be turfed with nursery sod.

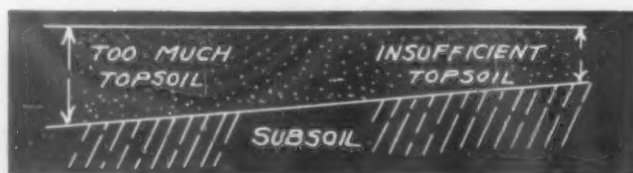
Although this program may well prove to be the answer to the perennial problem of how to obtain sod relatively inexpensively, it's not one to be embarked upon lightly. There are pitfalls which could spell ruin for the two-year program.

If, for example, the nursery is located on stony soil, it would be difficult to strip the sod and the wastage would be higher than 25%. Neglect of the nursery for a few weeks could also result in inferior turf. Furthermore, once the sod is laid (probably in May 1957), an unusually early or hot summer could affect it adversely unless it was carefully watered.

3. How important are subdrainage and surface pitch?

The importance of these factors cannot be overemphasized. Indeed, unless both are taken care of, the field won't be a success. The general methods of achieving subdrainage are shown in the accompanying sketches. With every field presenting an individual problem, however, the drainage requirements must be established on the site and a plan designed accordingly.

Surface pitch or grade is provided to facilitate quick run-off of water. Some pitches commonly used



What happens when subsoil isn't graded parallel to finished grade.

on football fields are also shown in the accompanying sketches. In making the surface pitch, it's important that the subsoil be graded parallel to the finished grade. If this point is overlooked, there will be too much topsoil on some parts of the field and too little on others.

The subgrade must be established before the drainage system is established. Road graders, bulldozers, and other mechanical equipment are used to make this grade. Fill may be required and grade stakes set with a surveyor's instrument are necessary.

4. What depth and type of topsoil are needed?

A depth of at least 6 inches is needed, but to allow for settling 8 inches of loose soil should be added. Because of the high cost of topsoil, many committees try to shave this compacted depth of 6 inches. Yet it has been repeatedly demonstrated that this is poor economy.

If it's financially impossible to provide this depth, cuts should be made on practice areas, surrounding strips, and outfields with the full depth allowed on football and in-fields.



General method of providing drainage.

In purchasing topsoil, take care to obtain value for money spent. Because plant food elements can be added through fertilizing, the physical condition of the soil is more important than its chemical content.

A sandy loam somewhat lighter than good garden loam is the best soil for athletic turf. It must be reasonably free of stones, clay lumps, and other debris.

Screening of topsoil is sometimes considered. This is, however, an expensive operation and it's doubtful whether it's worth the extra cost. While it's desirable to obtain weed-



If subsoil is of a porous nature, probably no further subdrainage is required.

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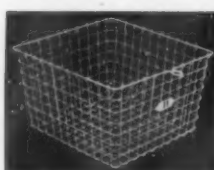
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Write for Literature



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free topsoil, it's seldom possible to do so today.

Topsoil is spread with a light farm tractor and blade. Sometimes, bulldozers or graders are used for this purpose. But with such heavy equipment, care must be taken not to crack or disrupt the tile lines. If they've been carefully laid and backfilled, most of this danger is obviated.

5. What amendments and fertilizers are added to the topsoil?

Consideration should be given to adding peat, sharp sand, superphosphate (20%), lime, an insecticide, and a complete fertilizer.

Nearly all turf soils are benefited by an admixture of 3 to 4 standard (20 bushels) bales of peat moss per 1,000 square feet. Peat holds moisture and reduces the likelihood of soil compaction in future years.

Except for the sandiest loams, all soils will be improved by the addition of 3 cubic yards coarse sand per 1,000 square feet. This prevents soggy in the field in wet weather. A coarse sharp sand free of stones is needed. While it's desirable to add sand, it must be pointed out that many good fields have been built without it.

Superphosphate (20%) is a material often overlooked in construction. It provides phosphoric acid essential in promotion of a deep root growth so desirable in athletic turf. Twenty pounds per 1,000 square feet is the recommended rate.

Lime is not required on all soils. The best way to find out is to have the soil analyzed. The analyst will tell you if lime is needed and the required rate.

When the peat, sand, superphosphate, and lime have been evenly spread, they should be thoroughly incorporated into the topsoil by disc harrowing. A thorough mixing is required because pockets or layers of these materials left in the soil will cause trouble in years to come.

In addition to these four materials, a complete fertilizer at 20 to 30 pounds per 1,000 square feet is needed. But this is added after the surface is graded and immediately prior to seeding.

In Japanese beetle belts, soils are sometimes grubproofed during construction with chlordane or DDT materials to eradicate grubs of this insect and to keep them out for several years. Experience has shown that it's often best to postpone this operation until some months after the grass has grown.

6. How is a smooth surface made with correct pitch?

Grade stakes are again required. By floating the area many times with a tractor-drawn wooden float, a chain harrow, or a peg-tooth harrow, a relatively even surface is obtained. After this, it may be advisable to handrake the area one or more times to remove sticks, stones, and similar debris.

This costly operation can be reduced and sometimes eliminated by using a mechanical rake or a stone picker pulled behind a light tractor.



A subsoil drainage system when tile is used. Good types of tile are available.

7. Can weed seeds be killed prior to seeding?

If the new field is left unseeded from April until August and disc harrowed every 3 or 4 weeks as weeds in quantities appear, many weed seeds will be eliminated. Smother crops of Buckwheat are sometimes seeded in early June at the rate of 2 pounds per 1,000 square feet, and disced in when the crop is 8 to 12 inches high and then re-sown. This is repeated several times. Not only does it reduce weed-seed content, but it improves the physical condition of the soil.

Calcium cyanamide applied at 50 to 75 pounds per 1,000 square feet will also kill weed seeds. After using the chemical wait 3 to 6 weeks, and longer in cool weather, before sowing grass seed. If cyanamide is used, little or no lime will be needed; and instead of a complete fertilizer, one containing only phosphoric acid and potash is needed.

By restricting seed sowing to ideal periods (September in the North and spring in the Bermuda grass area of the South), the danger of weeds will be largely avoided. Weeds that do appear at these seasons are often those that die after a few mowings.

8. What is the ideal time span for building a new field?

(Continued on page 62)

All Eyes
Are on
FAIR PLAY

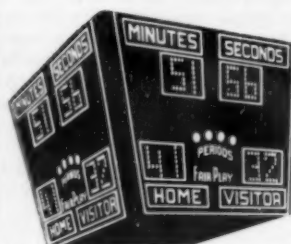
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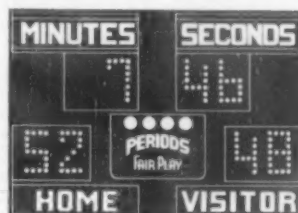
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COACHES' CORNER



Please send all contributions to this column to Scholastic Coach, Coaches' Corner Dept., 33 West 42 St., New York 36, N. Y.

WHEN Harvard announced a ban on alcoholic beverages at football games, a U.P. dispatch clarified, "Harvard Bans Nips at Games." Dizzy Lizzy, who never reads anything but the headlines, promptly demanded an investigation by the Anti-Defamation League and the League for Democratic Action.

"Harvard," she informed them, "is discriminating against the Japanese."

Concordia Prep of Bronxville, N.Y., invited "King Kong" Klein, the old NYU star now officiating in Westchester County, to guest speak at its annual football banquet—and a good Klein was had by all. The King laid 'em in the aisles with a story about a Concordia scrub who had sat out four seasons on the bench.

As the final whistle blew, the scrub plodded off the field, heart-broken over the realization that he hadn't even won his letter. An unknowing friend accosted him. "Tony," he said, "what are you down in the dumps for?"

The scrub sadly shook his head. "Long time no C," he wept.

The big "catch" of the past high school football season, we hear, is a Vallejo (Calif.) High School halfback named Dick Bass. His credentials are positively awe-inspiring. In eight games, he scored 32 touchdowns and 32 conversions for 224 points, and averaged 14.1 yards a carry! Dozens of colleges and even the pros are hot on his trail.

One of the Southwestern big-time coaches is a strict disciplinarian who's a holy terror at chewing out training-rule offenders. His tongue is absolutely venomous. One of his halfbacks swears that the pygmies come over from Africa just to dip their darts in him!

As assistant football coach at Chase (Kans.) H.S., Gordon Mettling does a lot of taping. As he was strapping an ankle on a backfield man last month, a big tackle came in with a blister on his heel. One of the team managers, a freshman, came over and asked Mettling what to do for it. Mettling, busy on his job, snapped, "Aw, go tape an aspirin on it."

A little later he heard the big tackle cry, "What the heck are you trying to do?" He looked up—and sure enough the manager was taping an aspirin on the blister!

Army was playing Georgetown in 1915 and big, tough John McEwan, Cadet tackle, was having quite a tussle with

big, tough Bob Gormley, Hoya tackle. Finally, Gormley sank his teeth deep into McEwan's bicep.

The Cadet tackle roared with pain. "You bit me, you so-and-so!" he bel-lowed.

"Yes," said Gormley, "and if I get the chance, I'll bite your ears off."

The referee came up. "What's the matter here?" he asked.

"This so-and-so bit me!" snapped McEwan, showing the teeth marks on his arm.

The referee turned to Gormley. "You're out of the game for biting."

"He tried to strangle me," Gormley protested.

"Yes, yes," said the official, "but we've got to draw the line someplace. We must have no biting."

Lou Little once had a chance to make a fine sportsmanlike gesture. But the officials robbed him of it. It seemed that one of Lou's weak wartime Columbia teams was playing a Pennsylvania powerhouse, when Lou noticed that his team had 12 men on the field. He started to call time, but before he could catch an official's eye, Penn ran two plays and scored a touchdown.

"After that," Lou says, "the thing that bothered me was: Why did my boys line up in a 6-2-2-2 instead of a 7-3-2?"

The golf fiend returned from a long, hard day on the local course. His wife kissed him and remarked that their boy, Willie, had just come in, too.

"He says he's been caddying for you," she remarked.

"By golly!" exclaimed the golfer. "No wonder that kid looked so familiar!"

The Light Side's 1954 All-America Eleven

(By Carl H. Winston in Look Magazine)

Left end: Roy Flotsam, Embraceable U. With a fractured collarbone and a bruised nose, he insisted on quitting the game and rushing to his doctor.

Left tackle: Remington Underwood, sports writer. In describing a game on October 23, he consistently called the football a football, disdaining to term it a pig-skin, oval, leather or prolate spheroid.

Left guard: Pete Quagmire, coach of Burlap Teachers. In a pre-season statement, he predicted he'd have a terrible team, wouldn't win a game. He had a terrible team and didn't win a game.

Center: H. Mustard Smear, hot-dog merchant, Matrilene U. In 11 games at the Bowl, he managed to stand directly in front of 42 spectators at crucial points, obstructing their view of 21 TDs, seven field-goal tries and 14 completed passes.

Right guard: Elmer X. Parchment, Fatback A. & M. First college president in the country to announce that his team (which had won four of its last 34 games) would positively not accept any Bowl invitations.

Right tackle: Flossie Frisbie, Oak High School cheerleader. With the score 49-0 against her team in the second period,

Flossie quietly left the stadium and went to a movie.

Right end: H. W. Hansom, Bankers and Brokers College. After his alma mater managed to drop three straight games, this wealthy alumnus gave out a statement in which he said he was perfectly satisfied with the coach.

Quarterback: Edgar Eyesore, tele-caster. Describing a game on November 6, he at one point told his hearers: "I haven't any idea of what that play was, who carried the ball or who made the tackle."

Left halfback: Walter A. Sleazy, ticket speculator. Selling tickets for the biggest game of the year, he admitted that some of the \$4.40 seats he was peddling for \$35 each were not "right on the 50-yard line."

Right halfback: Daisybelle McIntosh, Queen of the Petunia Pageant preceding the Succotash-Mulligatawny game, refused to pose for press photographers. "I don't want my pitcher in the paypus," she said.

Fullback: Butch McConaghey, Boilerplate Tech coach. Given a TV set in his hospital room so he could see his players "win the big one for Butch," the dying McConaghey watched the opera instead.

Safety in Baseball

(Continued from page 49)

hips on the side and back. Since sliding is an integral part of baseball, contusions or "strawberries," as they are called, are frequent occurrences. Pads prevent injury and infection to the hip. Ashburn, one of the leading base stealers, tears his pants almost every time he slides. Without pads, contusion would be quite frequent.

Mesh Heel Pads are made of light flexible metal and are sometimes worn by first basemen and other infielders covering the bases. Worn under the stocking, they cover the heel cord for about six inches above the heel, minimizing the danger of the foot and heel cord being stepped upon and torn by the spikes of a runner.

Pitcher's Toe Plate is an extra piece of heavy leather or metal sewn on the side and toe of the pitcher's back shoe. Since a pitcher nearly always drags his foot after finishing a throw, the friction of the drag on the toes and foot not only wears the leather but may cause blisters and infection if not protected.

Supporters. Metal jock supporters should be worn by pitchers and catchers. Deflected balls around the plate frequently strike the testicles and cause excruciating pain. Pitchers must look out for hard hit line drives which strike in front of them.

Bats should be chosen with care when the player steps to the plate. Flying bats have caused serious injury to spectators or players. If the handle is too thick or thin, the player's grip may not be secure. He should use rosin or other sticky substances to insure a good grip.

Hand Protection. Catchers use small pads of foam or sponge rubber in the palm of their catching hand to protect against hard thrown balls. Batters wear special gloves on their hands during long hitting sessions to protect against blisters and callous.

Baseball Apparel. Experience has shown that uniforms made of flannel tear less easily, dry out faster, and are more comfortable than those made of other materials. A wool shirt worn under the baseball shirt, especially in cold weather, will prevent strain of the throwing muscles by keeping them warm. A neck choker, which is an additional piece of cold weather apparel, prevents too rapid cooling off in cold weather.

PROPER FACILITIES

Facilities are just as important to the safety of the player as equipment and practices. The following facilities should be present for maximum safety:

1. A six-foot wide cinder path laid out in front of the fence in the out-field. Contact with it under foot will warn the outfielder chasing a fly ball that he's close to the fence.
2. Foam rubber padding placed on the wall of near outfield fences will

(Concluded on page 59)

PARTIAL LIST OF BRADLEY MULTI-STALL SHOWER USERS

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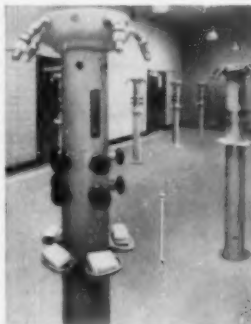
Blackfoot H. S.,
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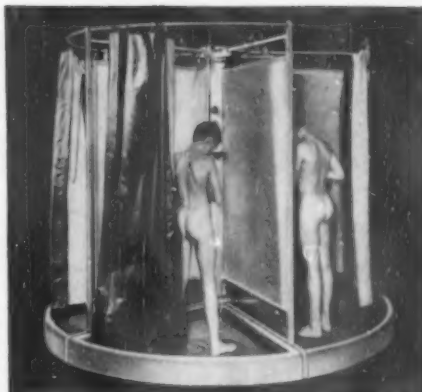
Lyman Moore School,
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The Showers with partitions as shown at top of ad can also be furnished as Column Showers without partitions as below.



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UNIT



3-STALL
UNIT



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UNIT

The 5-in-one-group Showers are placed away from the wall, the 3-Stall Units are located at the wall, while the Corner Showers make available corners otherwise wasted. At left is shown a shower-room with Bradley Columns without partitions or curtains.

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By **EDWARD L. TEAGUE**
Asst. Coach, Univ. of Maryland

A Low Cost Blocking Sled

WHERE limited budgets prohibit the purchase of a commercially manufactured blocking sled, the football coach must either go without one or improvise his own. That was the situation that confronted the author at Guilford College in 1949, and which led to the construction of an extremely satisfactory homemade practice device.

As you probably know, most home-made affairs are constructed of wood with blocking pads that cannot be removed. This has a distinct drawback. Since the sled is often left out on the field overnight and is sometimes used on wet and muddy days, the blocking pads can be ruined.

We hence felt that the pads should be made removable. We used the easiest plan we could find, making the sled as strong and as tight as possible by using bolts and nuts wherever feasible.

Since we needed some scrimmage dummies for practice fields, we decided to try to combine the dummies and the sled. First we bought seven fairly inexpensive dummies about 40" high, filled with sponge rubber scraps. We found that the sponge rubber gave the dummy a more natural spring than other types of fillers.

The sled was constructed out of used 4 x 4 and 2 x 4 lumber, as shown in the accompanying diagrams. By using nuts and bolts

wherever possible, we were able to tighten up the sled periodically and also dismantle it during the off-season.

After building the sled, we experimented with many ways of providing shock absorbers and a frame on each side of the sled to which we could strap two dummies. Finally, we hit on the idea shown in the diagram.

The springs were obtained from a nearby auto junk yard for about five cents apiece. They were old valve springs, and we found that eight springs would do the job for us. Bolts 12", 10", and 8" were used throughout, with the longest ones in the shock absorber construction.

Between the two frames provided for the dummies, a padded crossbar was built. This furnished a fine surface for the lineman to practice the straight arm shiver employed on defense, and also enabled a lineman to strengthen his arms and legs by pushing the sled by himself.

The big advantage was that we could strap two dummies on the sled before practice, using regular canvas belts similar to the GI type; then, when the dummies were needed for other drills, we could unstrap them and send them where needed.

This gave us double use of the dummies; and since we could strap any two to the sled, we could rotate the ones used for this purpose and thus derive the most use from all.

A sled of this type can be built very easily and inexpensively in the woodworking shop of your school, or, as we did, right on the field. We used scrap lumber and springs bought from the junk yard, which cut our cost considerably. Our total cost was about \$12, not including the dummies. The two dummies add about \$24 to the total cost.

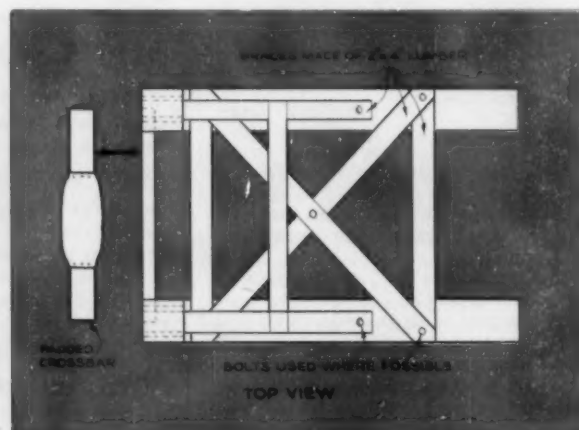
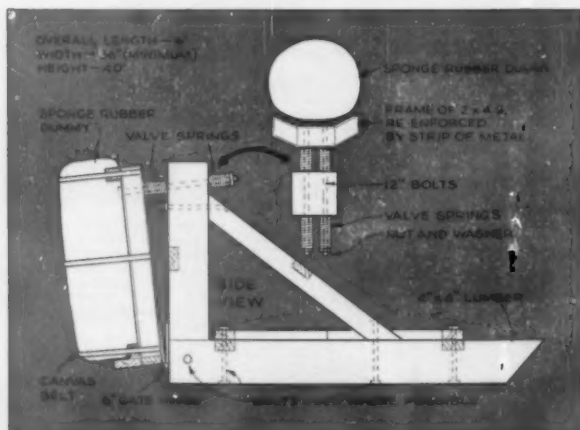
If other dummies are available, however, there is no need to buy new ones. We felt that the sponge rubber dummies gave more spring and held their shape better than the felt or cotton filled type.

We found that our men could employ this sled in every manner that the standard models permitted. Two men at once could practice the shoulder block or the cross-body block on either dummy. And, with or without the dummies, the padded crossbar enabled the lineman to drill on defensive work using the hands.

It's important to provide a strong frame to which the dummies can be strapped. Three belts will hold each dummy securely to the frame. The coach can ride the sled to observe each man, as well as to add weight to it.

With proper care, including new coats of paint periodically, this sled will furnish good service for at least two seasons, after which you may be in a better position to buy a standard sled.

A small shed off the side of the practice field provided space for storing the dummies each night, while the sleds were left out on the field. By painting the sleds with several coats of deck enamel, we safeguarded them against the vagaries of the weather.



Safety in Baseball

(Continued from page 57)

protect against serious collisions. Padding or mats should be placed around poles or other obstructions on the playing field.

3. Rubber tops placed over sprinklers or drains in the outfield and sidelines will prevent a fielder from stumbling or catching his spikes in them.

4. Clear and distinct foul line markers on the field and fence offer another safeguard against injury. They give warning to the fielder that he's running out of bounds and into some obstruction.

5. During practice sessions, screens are vital to the safety of players. They are placed (a) in front of the first baseman to protect him against line drives from the batting cage during fielding practice; (b) a waste high screen in front of the batting practice pitcher will protect him against line drives. In back of him, a small foot-high screen will protect him from tripping on balls thrown in from the infield and outfield; (c) a screen or batting cage in back of the catcher will protect spectators and waiting players from being hit by wild pitches or foul tips.

6. The home plate should be level with the ground and beveled. If it's higher, a runner's spikes will trip over it. A high plate may deflect low thrown balls and become a hazard to the batter, catcher and umpire.

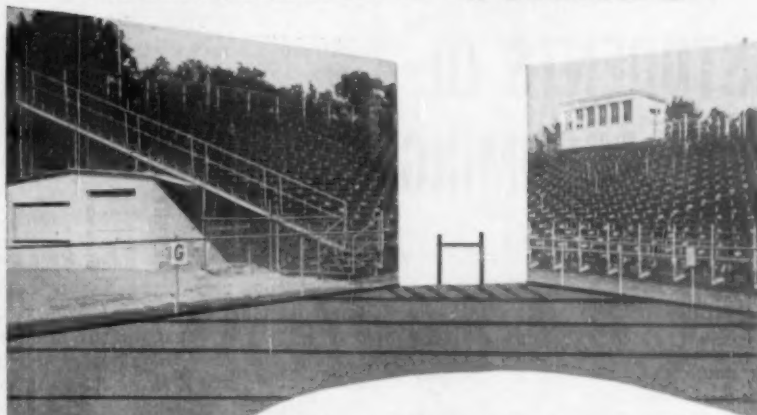
7. The bags should be well marked and securely fastened to the ground. The danger of oversliding, collisions, and arguments is accentuated when the bags are torn off or become loosened.

8. A rubber mat should be placed on the pitcher's mound during batting practice to prevent digging of holes and slipping. The pitching rubber should be firmly set in the ground.

9. Muddy playing areas are a distinct hazard to the players. Some clubs and schools cover the infield with a tarpaulin when rain is forecast before a game. If the field is muddy and the game must be played, sand can be placed on wet spots or kerosene poured over the area and then lighted. Sometimes, huge batteries of infra-red lamps can be played over the area. All of these methods are used to dry up the ground.

ONE of the greatest trainers in America, Frank Wiechec handles the two outstanding Philadelphia professional teams—the Phillies in baseball and the Eagles in football. He's been contributing articles to *Scholastic Coach* since his college training days at Temple, and all of them have been strictly big league.

New perspective in PERMANENT STANDS



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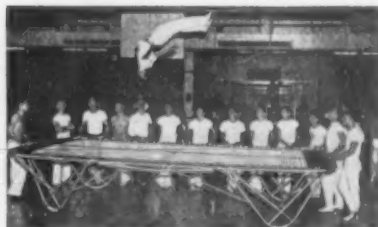
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The book is designed for boys from 12 to 17. In story form, it demonstrates to boys the social advantages of good regular grooming habits, such as keeping shoes and clothes neat, regular hair brushing, thorough bathing, and dental care.

James J. Heaphy, B.S., M.S., Curriculum Coordinator, Board of Education of the City of New York, has written a brochure of suggestions for teachers to accompany the booklet. Classroom quantities of these booklets, together with the suggestions for classroom use, are yours for the asking. Just fill out the coupon below, send it in, and we'll send you the whole kit immediately.

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Gentlemen: Please send me the grooming booklet for _____ students, and _____ copies of James Heaphy's teaching guide. I plan to use them for students in grade(s) _____.

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Tailored Outdoor Facilities

(Continued from page 11)

contributing factors in delaying the maturation of swimming facilities.

The minimum indoor facilities recommended for the boys' program at senior high schools of 1,500 boys and girls are as follows:

1. Locker and shower rooms: 40 shower heads, gravity-feed soap dispenser system, drying area, towel cage (enclosed), 6-1 locket-basket system (one storage basket for each boy with one dressing locker serving a different boy each of the six periods of the day), benches (fixed to the floor in front of each bank of baskets), 2 urinals at approach to shower area.

2. Toilet room for inside and outside accessibility.

3. Office, planned for maximum inside and outside supervision with shower, toilet, and lavatory.

4. First aid room.

5. Supply room with dispensing window.

6. Team room, adjacent to show-

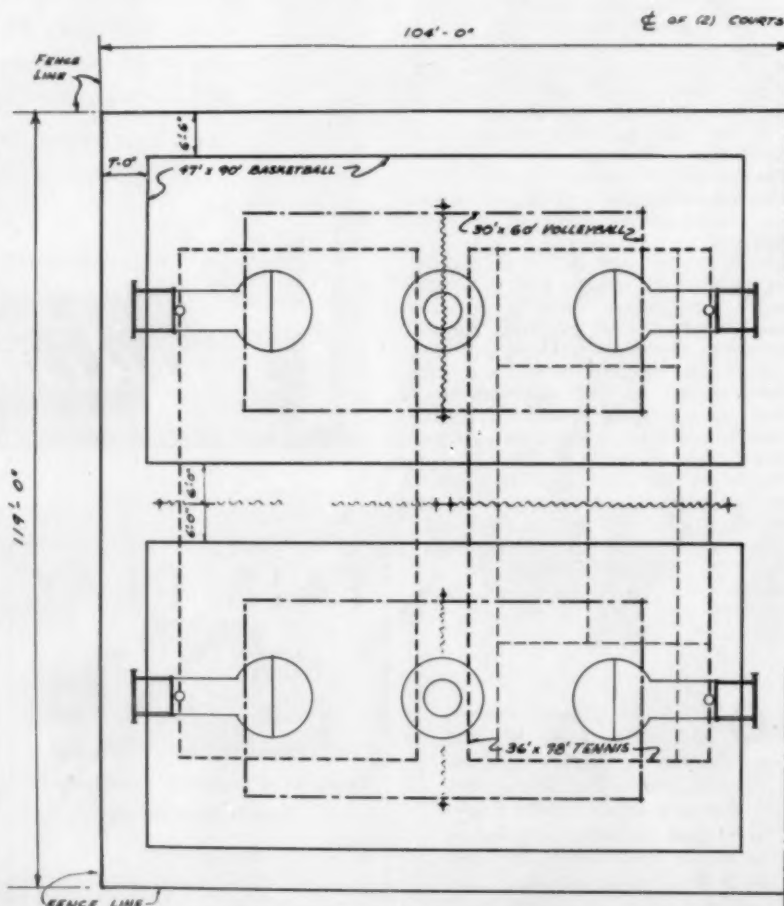
ers, equipped with 120 large, ventilated dressing lockers.

7. Gymnasium, 13,500 square feet. (At this writing three gyms are being constructed.) They feature:

(A) Main floor is 106' x 94' and is planned for one 86' x 50' basketball court, two basketball cross-courts, a total of nine basketball baskets, six of which are retractable and motorized. The floor is also marked for eight badminton courts and three volleyball courts. A teaching station is planned for gymnastics with the following equipment provided: 1 horizontal bar, 1 parallel bar, 1 horizontal ladder, 4 ropes for climbing, 1 adjustable horse, 1 springboard and 8 mats 4' x 6' x 2" with plastic covers.

(B) Rollaway bleachers for 1,000 people. (Games for larger crowds may be scheduled in one of two larger gyms.)

(C) A "Murphy Kitchen" is provided for school and community use.



Blueprint of half of a Multi-Purpose Court, showing the clever imposition of tennis, basketball, and volleyball courts; you can't beat this for functional economy.

(D) Recreation room. This is approximately 1,500 square feet and is used by both boys and girls. It is also a classroom.

(E) Adapted (corrective) room appropriately equipped.

(F) Storage, toilets, and foyer utilize the remaining space. There are no showers and lockers in the gym since the facility is adjacent to the boys' locker and shower building.

The recommended, minimum outdoor facilities for senior high school boys are as follows:

4 softball backstops, with hoods when adjacent to streets.

1 set of horizontal bars.

10 handball courts.

10 horseshoe courts.

2 multi-purpose courts.

1 baseball cage and diamond.

2 field game areas each 240' x 120' (in addition to football field and in addition to 2 fields for girls which are 300' x 150' each).

1 track and field.

1 football field.

Bleachers for 1,500 people.

1 storage house 40' x 20'.

3 drinking fountain areas (one on outside of locker building, one at multi-purpose courts, and one near the track and field).

Three new high schools have been built in the past few years and others are planned. Mission Bay High School is one of the most recently completed. Facility planning for physical education here was made easier by two factors: (1) all items had been previously standardized, and (2) the architect, Clyde Huffbauer, was an eminent and experienced person in school planning.

The accompanying black and white drawing of outdoor facilities at this school shows their location, relation and scale. They are as follows:

1. Football field, 12" crown, automatic sprinkler system.

2. Track, clay and decomposed granite surface, drained to inside concrete curb which is 2" high. Track width is 32' for straightaway to accommodate nine 42" hurdles. The land area would not yield a 220-yard straightaway. One 70-yard runway serves two broad jump pits and a similar one serves the pole vault mounds. In addition, there are two high jump mounds and a shot-put area.

3. Bleachers are provided for 1,500 people. Varsity football games are played in regional stadia which accommodate larger crowds.

4. Ten horseshoe courts.

5. Horizontal bars.

6. Baseball cage and diamond. This is used also for softball and other activities in the instructional program.

7. Four softball backstops.

8. Fieldhouse for equipment storage.

9. Four fields 240' x 120' each, for boys; 1 field 200' x 120' and two fields 300' x 135' each, for girls.

10. Two multi-purpose courts (see multi-purpose court drawing). This facility has many uses. On each multi-purpose court, there are four tennis courts. These are designed so that four basketball courts are superimposed upon them with one basketball court utilizing both halves of two tennis courts. Also superimposed are 4 volleyball courts with capped sleeves for posts. Shuffleboard courts may be painted on the borders. Twelve handball courts

appear in conjunction with the multi-purpose courts.

11. New gymnasium now being constructed.

12. Girls' locker and shower unit.

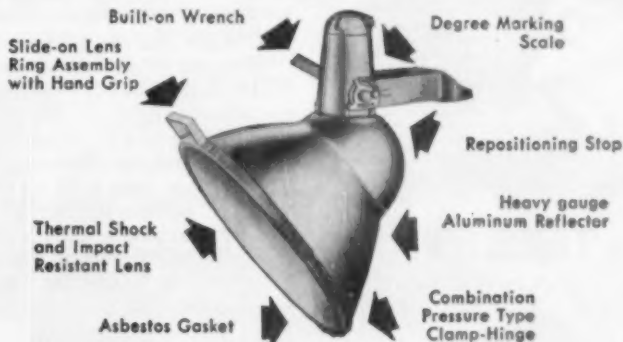
13. Girls' gymnasium is also being constructed east of the girls' locker building.

14. R.O.T.C. parade area, used also by physical education classes.

15. Area to the right (east) is now a nine hole City golf course.

It is to be noted that the facilities in the senior high schools of San Diego are geared to the physical education program. Even of greater import is the fact that the program is becoming increasingly more important to the children of San Diego.

NEW FLOODLIGHT PROVIDES EFFICIENT LOWER COST SPORTS AREA LIGHTING



The new Steber "Sportsliter" combines more economy, more efficiency and greater durability and long life than ever before. Every quality feature necessary for the best sports area lighting is built in, yet the cost is surprisingly low!



Flood Mounting



Pendant Mounting



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Sportsliters are available in open and enclosed models for 750, 1000 and 1500 watt lamps. The heavy gauge aluminum reflector is finished in Anodal, an exclusive Steber electro-chemical treatment which gives the aluminum a hard, smooth, non-corrosive, weatherproof surface.

Bulletin 127-53 gives complete details and typical layouts for various sports activities. The Steber Engineering Department will be glad to furnish special lighting layouts if you will write giving size and type of area to be illuminated and light intensity desired. No obligation, of course.

New Steber Gymnasium Fixtures Maintain High Level Illumination

Steber fixtures use R-40 or R-52 reflector lamps to provide constant, efficient, economical illumination. Eliminating bulky reflectors cuts down maintenance and reduces the cost of the Steber units. When lamps are replaced, new reflecting surfaces are automatically installed. *Light output of the units will always be as efficient as the day your Steber Units are installed!*

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Turfing New Athletic Fields

(Continued from page 54)

Though not always possible, about 6 months is a good period to allow for building a new football field or baseball diamond. North of the Bermuda grass area the most successful program includes completion of topsoiling together with incorporation of peat, sand (if used), superphosphate, and lime by early May. The area is then cultivated periodically over the summer months with or without a smother crop of Buckwheat. Finally, in late August or early September the field is fine graded, fertilized, and seeded.

This program is ideal because it allows for settling of fill and topsoil before seeding, the elimination of many weeds, and the sowing of seed in September.

9. What are the best grasses?

Permanent grasses (those that will live indefinitely) recommended for athletic fields in the North include Kentucky bluegrass and creeping red or Chewings fescue. The fescues are sold under their variety names including Illahee, Trinity, Canadian, Olds and others. In the southern part of the northern area, Zoysia japonica (Japanese lawn grass) is sometimes used.

In the South, Bermuda grass is most often used. This is planted from seed, plugs, and sprigs. Centipede, carpet, and St. Augustine grass also have their places. In arid parts of the Northwest, Kentucky bluegrass does well on irrigated fields, while Buffalo grass gives fair results when irrigation is not possible.

Because of their creeping habits and quick recovery after injury, the bents (grasses used on golf greens) might at first glance appear to be ideal for playing fields. But coaches have pointed out disadvantages to these bents in that they form an extremely dense mat and require pampering to be at their best.

One of the bent grasses, Colonial, which is sold under a number of variety names including Astoria and Highland, creeps by underground root stalks and doesn't possess the disadvantages of the other bents.

Together with permanent grasses which are slow in germinating, a small percentage of quick germinating nurse grass should be present in mixtures in the North. Grasses for this purpose include domestic rye and red top.

Since conditions are so varied in

the 48 states, the advice of the turf grass specialist at the state experiment station should be sought before the grass or mixture is selected.

10. How is the seed sown?

Wheelbarrow seeders with 15 to 20 feet spread can be used. Mechanical spreaders which sow the seed, cover and roll it all in one operation are sometimes preferred. When covering the seed, it's important to see that it isn't covered too deep because a covering of more than 1/4 inch may prevent it from germinating. When wheelbarrow seeders are used, the seed has to be covered by brushing or some other means and then rolled.

11. What care is needed after seeding?

If the weather turns dry, watering is required. Since this is a difficult operation on extensive areas, seed should be sown in the ideal periods when there nearly always is sufficient natural precipitation.

When the new grass has grown to about 3 inches high, clip it with a sharp mower set to cut at 2 inches. Barren areas where seed has not germinated should be resown at the time of the first mowing.

In September following spring seeding or in April following September seeding, the new field should be fertilized and from then on it should be maintained in accordance with details given in the January 1954 issue of *Scholastic Coach*.

12. What supervision of the contractor is required?

The architect (if there is one) or the committee certainly must check each step to see that specifications are being carried out exactly. While most of us are reluctant to pry too closely into the work of an experi-

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enced man, it's better for the contractor to have his mistakes discovered during construction rather than after the work is completed.

A summary of the answers to questions 3 to 11 can serve as a check list to the committee supervising construction without the aid of an architect.

Here are the points to check:

(a) Subsoil graded parallel to finished grade.

(b) Subdrainage at depth and spacings called for and correctly backfilled.

(c) Provision of required depth of topsoil of good quality.

(d) Provision of required amendments, their even distribution and thorough incorporation, preseeded weed control if called for.

(e) Careful surface grading.

(f) Provision of complete fertilizer at specified rate and its even distribution.

(g) Provision of seed of quality and kind called for and its even sowing at ideal periods.

(h) Required care after seeding.

Timing of operations must also be considered.

Once the new field is completed, it won't have a good turf covering for long unless it is adequately maintained.

Stroboscope

(Continued from page 42)

within the budget of each, to obtain the benefit of stroboscopic technique. If compact prints of champions in different fields can be placed within reach of all, and basic fundamentals shown, the single electronic flash can be used at different stages of an activity and compared with the strob shots as a teaching aid.

Using the pole vault as an example, we here at M.I.T. have strob shots of Richards, Laz, Montgomery, Morcom, and others on the bulletin board next to the vaulting pit. Aside from individual form idiosyncrasies, the basic vault pattern is constant.

A picture taken at any stage of a practice vault with the single electronic flash and Polaroid Land camera gives immediate results. Comparison can be made at any stage of the vault in this manner. Application of this type of photographic aid to all specialized activities can be a reality.

¹Rehling, Conrad H., "An Analysis of the Techniques of the Golf Drive," Unpublished Master's thesis, Springfield College, Springfield, Mass., 1949.

²Edgerton, Harold E., and James R. Kilian, Jr., Flash (Second Edition) Boston: Charles T. Branford Co., 1954.

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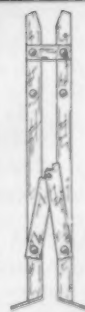
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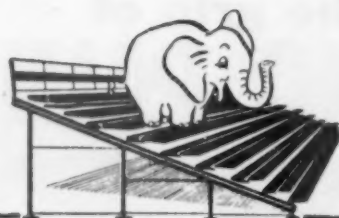
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Portable Floor

(Continued from page 38)

point, install 4 bolts as detailed. Tighten up the nut on the bolt until perfectly tight and lock same in place by stripping the threads with a coal chisel. Bolts to project up beyond the top of stringer one inch to receive the panel frame.

Panel construction shall be as follows: 2 x 2 S4S yellow pine frame approximately 4' wide and 8' long (width of flooring strip shall determine the width of section). Intermediate 2 x 2s are to be toenailed into the frame members as detailed. Mitre all corners of frame and lock the joint with alligator connectors (corrugated) into the top side of the frame members.

Over the frame of each panel or section, lay $\frac{5}{8}$ " Douglas fir plyscord (plywood). Nail to frame and intermediate supports with 8d common nails every 6", except the intermediate supports which shall be nailed 10" apart. All outside edges of this sub-floor must be perfectly flush with the outside face of frame.

Receptacle for bolts. Mortise into the underside of the frame, where shown on the drawings, cast iron or steel receptacles to receive the bolts projecting upward from the 2 x 4 supports. The center of each receptacle shall be on center line of bolts or 13/16" from each outside edge of panel frame at corners and center line of panels (approximately 4' width). Secure the receptacle with screws at corners of casting, as shown in the details.

Maple flooring shall be of 25/32 x 2" or 2 1/4" MFMA first grade strip maple, laid directly over the sub-floor with the length of the panel. Secure to bearings and sub-floor with 6d Helyx spiral nails or an approved equal. All nails shall be driven at an angle of 45° to 55° and set snugly into top of tongue of matching. Drill holes, a shade smaller than the diameter of nail used, through the tongue near the ends to eliminate splitting.

Where sections join the next one at the side and end of panel, plane off the tongue so that the edge of flooring strip shall be flush with the sub-floor and frame.

Lock strip. Cut away from the side of the last piece of flooring at each corner of panels a piece (in the case of 2 1/4" flooring) 1 1/2" wide and 18" long to receive the Lock strip, which should be a strip of flooring 2 1/4" wide and 3' long. Lock strip must fit snugly into the recess

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formed by junction of four corners of panels and set in place with countersunk screws not less than 2" long. Screws to stagger on each lock strip. This arrangement should hold at corners the adjoining panels flush with each other.

Sanding and treatment of floor surface: A good sanding job is necessary to insure a satisfactory finish and prolong its wear. Finished wood floors shall be sanded with power driven equipment, the speed of the sanding mechanism to be automatically variable so as to eliminate burning of the floor surface.

After the floor has been swept clean of all debris and laitenance, make the first cut with medium coarse sandpaper with the grain. The second cut shall be done with No. 1 sandpaper across the grain. The third cut shall be with No. 0 or No. 00 sandpaper with the grain but in the opposite direction of the first cut.

If the final sanding is done with No. 0 paper, it is good practice to smooth by removing the fuzz with steel wool of No. 1 coarseness. This operation should be with the grain. When sanding is completed, sweep the surface of the flooring dust-free and cover the entire area with building paper until ready for the sealing or finishing process.

Floor treatment: The type of finish to be used on the Maple Flooring should be a penetrating sealer which leaves practically no film on the surface. Sealer shall be a heavy duty finish as approved by the Maple Flooring Manufacturers Association and applied in accordance with the manufacturer's direction.

If a faster floor surface is required for dancing or gymnasium work, the use of fine, ground white corn meal or a non-slip wax is suggested. When the floor is used for roller skating and the surface is slippery, the use of medium ground yellow corn meal or an approved equal is suggested.

Floor assembly: It is a good plan to give each floor section identification for its place in floor assembly. It is suggested that letters be used for row locations and numbers for position in row. For example, A-1, B-2, C-3, etc. Place the letter and number on one edge only of each section, so the sections can be assembled in floor exactly as originally fitted together.

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(Continued from page 22)

games for about 15 or 18 years. However, our late season games are played in the afternoon because of the chances of disagreeable temperatures after nightfall in our (northern) part of the state.

"We're confident that our take at the gate is considerably higher where the games are played at night."

CALIFORNIA

By Roland T. Davis

Woodrow Wilson H. S., Long Beach

AS one of the Long Beach high schools, Woodrow Wilson is a member of the Coast League for all interscholastic competition. This league is one of 27 which compose the southern section of our district. It embraces seven schools, situated near each other.

With the exception of one experimental Saturday afternoon game, played in our Memorial Stadium, all of our league games are played on Friday night—starting at 8:00 o'clock. Our Class B (weight team) games are played on Thursday afternoons, and our junior varsity games on Monday afternoons—starting at 2:45.

When we played all our games in the afternoon, before our permanent grandstands were installed, our average attendance was around 1,000 to 1,200. Since switching to night games, our average has jumped approximately 5,000. The Class B and jayvee afternoon games draw about 500 to 600.

In line with the trend toward increasing admission prices, our general admission prices have gone from 60¢ in 1948 to \$1 today. However, our student tickets, bought before the close of school, are still 25¢.

Thanks to night ball, our revenue has jumped from around \$3,000 in 1948 to about \$12,000 last year. Like most schools, however, we tend to ride the crest whenever we have a winning team and drop noticeably whenever we lose three or more games.

Most schools in this section began playing night football in 1946 or '47. The trend has been increasingly toward night football, except for the Los Angeles City League, an autonomous body which doesn't generally participate in night games.

The control of the student body is somewhat more difficult at night, since the students do not go directly to the game from school, but rather from the home. This tends, in some cases, to create a feeling of less restraint. However, I do not feel there's any undue amount of rowdiness.

Our lighting facilities are becoming increasingly more adequate. In gen-

eral, the lights on our high school fields are very good. I believe our particular home field possesses 100,000 watts of lighting power.

We film most of our games. And since adopting the rubber-covered football, we've improved the caliber of play—since the rubber ball doesn't become slippery from the moisture which often develops on the turf at night.

I believe I'm speaking for the high schools in our area in saying that we're quite satisfied with playing our varsity games at night under existing conditions, but are not interested in expanding the night program to include other games.

Night ball has a definite advantage over day ball insofar as traveling games are concerned. The necessity of releasing large numbers of students from school in order to travel to the opponents' community presents many problems which aren't experienced for night games.

KANSAS

By M. D. Morris

Newton (Kans.) High School

THE Ark Valley League, composed of the larger high schools in the Sunflower State, has been playing all its football at night for over 20 years. We think of football strictly in terms of "under the lights."

The member schools include Arkansas City, El Dorado, Hutchinson, Newton, Wellington, Wichita East, Wichita North, Wichita West, and Winfield. With one exception, all the games are played on Friday nights. The lone exception is a Wednesday game, played the first week in November in connection with the annual meeting of the Kansas State Teachers convention, which is held the first Thursday and Friday in November.

The attendance at our games varies from 2,500 to 9,000, depending on the standing of the teams and the size of the schools. (Enrollments of the Wichita schools range from 500 to 3,500.) Though football receipts have increased considerably, so have expenses and most schools just about break even on their athletic programs.

Most of our floodlighting plants are deemed adequate, but improvements are constantly being made. Newton's field produces 52,500 watts of light and we're hoping to add additional power as soon as possible.

("The Ark Valley League" is the abbreviated name for the nine Arkansas River Valley schools mentioned above, all of which are considered in the "large school" class.)

OHIO

By Angus E. King
Cincinnati Public Schools

THE Cincinnati Public High School League is composed of seven senior high schools which play night football in one centralized stadium—the Howard C. Trechter Memorial Stadium. There are also four Catholic schools in the city, and some of our interleague games are played on one of the two floodlighted college fields.

In order to get in all our league games each week, we play a double-header on Friday night and a single game on Saturday night. The Friday twin bill starts at 6:30, with the second game going on at approximately 8:30. This gets all the students out of the stadium by 10:30.

Our Saturday night single game starts at 7:00 and is usually over by 9:00 or 9:15, thus leaving the evening free for other activities.

Our stadium seats approximately 15,000. Our preview, or opening game, usually draws around 12,000, after which the attendance levels out to an average of around 6,000.

Previous to 1952, when we started playing all league games at the centralized stadium, most of our games were played in the afternoon. The tremendous competition of television and college games plus the mushrooming cost of the interscholastic athletic program drove us to night football. (In our state we cannot use tax money for high school athletics.)

The move turned out happily, for the receipts at night triple the former afternoon figures—a reserved adult section helping swell the crowds.

LIGHTS ARE THE BEST

Our lights, being comparatively new, give us one of the best lighted fields in this section. The total wattage comes to 243,090 and cost around \$40,000, which we're paying off to the Board of Education. Our schools prefer to play at night because of the increased revenue, attendance, and interest.

The floodlighted game creates some problems, of course. The students' behavior and sportsmanship are factors that demand constant attention. But we've inaugurated several plans to alleviate any possible malfeasances. We're constantly carrying on educational campaigns among our students, and we believe our control of the games is most outstanding.

In addition to our senior high school programs, we conduct a reserve and junior high school schedule among some 13 schools. But these games are strictly daytime affairs.

Summing up, then, in general we believe that night football in the public school league in Cincinnati is operated on a very sound basis. But we're not complacent. We're constantly carrying on campaigns to educate our students on proper behavior and sportsmanship.

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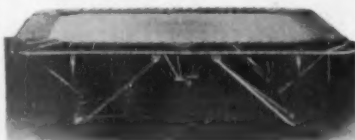
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Rec. Building

(Continued from page 9)

ing up the back end of the intervening unit (to be described). A towel dispensary room and window are located beside the shower room.

The next unit is comprised of four regulation **Handball and Squash Courts**, having recessed lighting. The aforementioned shower rooms form the back end of this unit.

Next to these courts is a 75 by 42 foot **Swimming Pool**. A permanent take-off is built up at the shallow end, while a low board and a high board are at the deep end.

Special facilities are laid out on three sides of the pool. A visiting-team dressing room, a home-team dressing room, and an officials' room run along the south side; an observation room with a glass front is located in both the southeast and southwest corners; and a girls dressing room, equipped with lockers and hair dryers, is at the west end of the pool along with shower and toilet rooms.

Seats for approximately 270 spectators go up over the dressing rooms at the side and ends.

The pool has underwater lighting and two observation windows. The pool, deck, and gutters are of nonslip tile, while the walls are of glazed tile to a height of 10 feet. The gutters are the open type and the ladders are recessed.

Fixtures recessed in the sides of the pool enable the instructor to stretch ropes between them and thus divide the pool. Other fixtures, flush with the floor, are placed at the sides where the races finish, so that finish lines may be hung from the standards temporarily placed in them.

The pool is warmed by radiant heating, with the pipes running under the pool deck. This type of heating not only keeps the room warm but eliminates a cold deck for the swimmers' feet and helps dry the water on the deck.

The last section, comprising the north end of the building, consists of a 100 by 160 foot **Intramural Room** containing two regulation basketball, two volleyball, four badminton, and two shuffleboard courts. The floor is of mastic tile, with the court lines of inlaid tile in contrasting colors. This room is also used for the three or four big dances of the college year.

Not a post or obstruction of any kind mars any of the rooms described above.

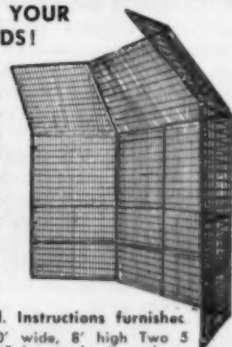
The Recreation Building possesses three front entrances—one near each end and one in front of the

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Arena. The type of activities featured in the adjacent areas is indicated by figures carved in relief (out of Indiana limestone) above and at the sides of the entrances.

The entrance to the Arena is by four double doors which open into a large lobby, part of and through which runs the long front corridor. The corridor and lobby feature glazed tile walls, a terrazo floor, and an acoustically treated ceiling.

Ticket windows are located on each side of the entrance, with a men's room near one side and a ladies' room near the other. A trophy case, facing the entrance, is built into the inner wall of the lobby. Four double doors, two on each side of the trophy case, lead from the corridor into the Arena.

Another long corridor, similar to the one described above, runs along the back of the building. A home-team room, trainer's room, equipment room, officials' room, and visiting team room are located along the outside of this corridor.

On the second floor, above the offices along the front of the building, are meeting rooms which may be reserved by college organizations. If needed, such rooms will also be built on the second floor above the team, equipment, and trainer's room along the rear of the building.

The building is constructed of cinder blocks and is supported by large steel uprights and beams. The outside cinder blocks are covered with brick veneer, while the cinder blocks inside the building are covered with tile and paint.

In closing, a kudo is definitely in order to B. C. Hopeman, experienced builder and architect who's chairman of the Building Committee of the Board of Trustees. Without his interest and counsel, the Recreation Building would not have been possible.

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Backboards—Fred Medart Products
Scoreboards—M. D. Brown Co.
Gym Lights—Lighting Research Mfg. Co.
Gym Floor—Robbins Flooring Co.
Lockers—Berger Mfg. Co.
Shower Fixtures—Benjamin Electrical Mfg. Co.
Diving Boards—American Playground Device Co.
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NADEN AND SONS WEBSTER CITY, IOWA

A Multi-Purpose Fieldhouse

(Continued from page 7)

level is 12 feet higher—on a level with a future balcony to be used as a girls' gymnasium and for extra seating capacity.

Locker rooms are between fields and fieldhouse on two levels—the boys' and team lockers at track level, and the girls' lockers directly above at balcony level.

Seating. In a combination fieldhouse used for both track and basketball, seating can be provided by permanent balcony seating, by knock-down bleachers set up over the track, or by folding and/or rolling bleachers on both track and balcony. This last method provides the greatest flexibility—important because most functions require only a small number of seats.

At Keokuk, bleachers on the balcony are retractable against the north wall, where they don't interfere with the girls' athletic program. Bleachers at track level are demountable and are placed so they don't interfere with the running track.

A 30' by 41' room has been provided for storage of 20-foot long seat boards, thus doing away with unsightly stacks of boards piled in a fieldhouse corner. During the basketball season, this room is used as a smoker and concession room.

Playing floor. A permanent playing floor is mandatory in a high school, since a demountable floor is too difficult to assemble. We stuck with the standard hard maple floor—though a plywood floor in temporary use at one of the colleges we surveyed has proved quite satisfactory.

Since coaches seem to have little preference as to orientation of the basketball court, the seating arrangement making use of the balcony dictated the east-west axis.

Whenever the fieldhouse floor is clay, the hardwood floor should be at least eight inches above the clay to keep as much dust and grit as possible off the playing surface. Duckboards or canvas laid on the clay to form walkways for spectators are still advisable.

To prevent the basketball floor from cupping, a proper base and good ventilation are absolutely essential. At Keokuk, the floor is set on a 1 x 6 subfloor laid diagonally. A layer of moistureproof paper between subfloor and supporting 2 x 6 joists keeps moisture in the clay from reaching the floor. These joists in turn rest on 3 x 8 sills set into

the clay treated to prevent deterioration.

Because of a temporarily high moisture problem last spring, the maple floor was not laid until fall, nearly a year after completion of the rest of the building. The delay, however, will undoubtedly add to the life and dimensional stability of the floor.

Running Track. Keokuk's High's fieldhouse is 120' wide and 200' long, small enough to require a 12-lap track. To permit the minimum straightaway of 200 feet, a straight track runs outside through an overhead type door wide enough to accommodate four lanes. Thus, the straightaway can extend outdoors to 100 yards when necessary.

Perkins & Will thoroughly investigated the use of asphalt paving mixed with shreds of rubber. These floors are almost as resilient as clay and sawdust. They are easily maintained, they obviate the humidity problem, and they mean a cleaner fieldhouse.

There are two drawbacks, however. First, this surfacing can be recommended only when a specification for the mix has been successfully tested and when experienced supervision of the paving process is available. As in anything else, poor workmanship and poor design can't be overcome.

Second, rubber-soled shoes are required on an asphalt track. Thus, when the home track team visits schools with clay tracks, it means a change of shoes and possibly a handicap to the team.

We chose a clay track at Keokuk partly because good clay was available locally and partly because the fieldhouse was to be used for such a great variety of events—circuses, football practice, horse shows, and by girls as much as boys.

The track is made of a local orange clay with a good percentage of sand in it and coarse sawdust mixed in. It must be sprinkled

EQUIPMENT SUPPLIERS

Gym Floor—Gerrard Co.
Backstops—Naragansett
Bleachers—Universal Bleacher Co.
Scoreboards—Naden & Sons
Lockers—Berger Mfg. Co.
Showers—Powers Regulator Co.
Heating—The Trane Co.
P. A. System—Rauland and Borg Co.
Gym Lights—Holophane

every evening with a garden hose to keep it spongy, and should be thoroughly soaked every weekend. However, heavy trucks or animals which might break up the lighter asphalt floor don't harm the clay floor. A quick raking brings it back to normal.

Lighting. It was a surprise to find in our research that many coaches and athletic directors do not like windows or skylights. They consider daylight hard to control and undependable, and prefer the steadiness of artificial light.

Coach Don Shupe was not one of these. He agreed with us that the psychological and hygienic effects of sunlight in Keokuk's fieldhouse far outweighed the problems of occasional uneven light conditions. There are windows in six of the eight bays in both east and west walls, and in monitors running from one end of the fieldhouse to the other. These windows provide bilateral light and permit thorough ventilation.

When lights are needed, each 24' by 120' bay has six fixtures which can take 750, 1000 or 1500-watt bulbs. The brightest bulbs are used directly over the basketball court; smaller bulbs are adequate in other fixtures for most events. All are suspended on Thomson hangers to permit relamping from the floor.

Backstops. Because of the occasional need for a completely unobstructed floor area, backstops on posts and the portable cart type that take up storage space were ruled out. Keokuk's backstops are the swing-up type suspended from ceiling framing.

Special framing was worked out with the manufacturers to hang the four practice backstops on uneven legs from the sloping beams. These stops can be retracted either by hand or by electric drill when speed is necessary, and lie against the ceiling well above the eye level of spectators sitting in the balcony.

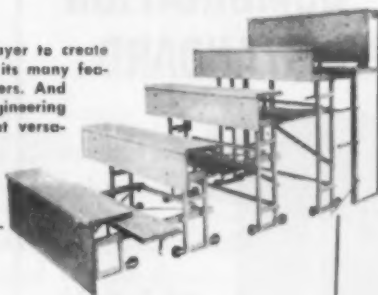
Other Activities. The clay floor of the fieldhouse is excellent for softball, volleyball, wrestling, gymnastics, and football scrimmage. Its possibilities for community use are virtually unlimited, not only for sports such as tennis and badminton, but also for bazaars, fairs, and shows of all kinds.

The 12' by 14' overhead door will accommodate the largest trucks, which can be loaded and unloaded under cover. For programs requiring a stage and seating, temporary stages can easily be built and placed so the folding and portable bleachers can be used without repositioning.



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59 STEWART IRON (50)
Catalog of Fences, Baseball Backstops, Wire Mesh Partitions, Railings, etc.

60 TRACK & FIELD EQUIP. (64)
Catalog of 60 Items

61 UNION METAL (4)
(a) Bulletin, "Sports Field Floodlighting"
(b) Bulletin, "Small Area or Recreational Floodlighting"

62 UNIV. ATH. EQUIP. (53)
Literature on Strip Steel Uniform Hangers and Ground Plugs (for marking fields)

63 WHITEHALL MEDICAL (49)
Information on Hydrotherapy Equipment

64 WIEMER DISPENSING (57)
Information on Basketball Dispenser

65 WILDROOT (60)
(a) Grooming Booklet
(b) Teaching Guide

66 WILSON (6)
Catalog

CIRCLE CORRESPONDING KEY NUMBERS ON FACING CARD

All Aluminum COMBINATION STANDARD



for Indoor
and Outdoor
Installation

USE 5 WAYS:

1. Volley Ball
2. Badminton
3. Tennis
4. Paddle Tennis
5. High Jump

Easy to Move
Easy to Install
No Maintenance
Light Weight

SPECIFICATIONS

8' high

•

Pipe 1 7/8" O.D. Heavy Duty Aluminum

•

High Jump Markings permanently engraved into pipe, graduated in inches from 2' to 6'.

•

Crossbar Slide of tempered cast aluminum, adjusted by quarter turn of thumb screw.

•

Base plate 1/2" Aluminum, 20" diameter.

•

Flush Bronze Floor Plates 3" diameter for indoor installations; 18" sleeves with caps for outdoor installations.

Each Standard with Base Plate
Weighs 16 1/2 lbs.

SCHOOL PRICE LIST

- #5WI—5 Way Combination... \$99.00 pr.
8' (indoor) with Floor Plate
- #5WO—5 Way Combination... \$74.00 pr.
9' 6" (outdoor) with Sleeves
- #4WI—4 Way Combination... \$65.70 pr.
(indoor) with Floor Plate
- #4WO—4 Way Combination... \$51.75 pr.
(outdoor) with Sleeves
- Extra Floor Plates with Guys... \$11.00 pr.

F.O.B. Maspeth, N. Y.

SINGLETON & YUTZLER CO.
314 Hillside Avenue
Williston Park, L. I., N. Y.

MASTER COUPON

This handy method of obtaining free materials is provided for your convenience. Each advertiser is keyed by a number. To obtain listed items, circle corresponding number on attached business card and mail to us. We pay postage. Numbers in parentheses after each listing denote page on which advertisement may be found. To assure delivery, check each advertisement carefully.

1 AALCO MFG. (68)

Catalog of Complete Line
of Equipment

9 BRISTOL-MYERS (63)

Information on Minit-Rub
for Relieving Pain

2 AIR-PAD & BRACE (51)

Information on Pneu-
matic

- (a) Thigh Protector
- (b) Ankle Supporter
- (c) Shoulder Shock Cushion
- (d) Knee Brace

10 BROWN, M. D. (65)

Catalog of Electric Score-
boards for Baseball,
Football, Basketball

11 CHAMPION KNITWEAR (32)

1955 Catalog of Track and
Basketball Uniforms, Physical
Ed Uniforms, etc.

3 ALUMINUM ATHLETIC (67)

- (a) Information on Alumi-
num Spill-Proof Hurdle
- (b) Information on Alumi-
num Baseless Standards

COACHES' PRESS (66)

12 CONVERSE RUBBER (37)

(a) Information on Little
Kid Basketball

4 AMERICAN PLAYGROUND DEVICE (14, 54)

- (a) Catalog of Gym Baskets,
Basket Racks, Foot Baths,
Dressing Room Equip-
ment
- (b) Catalog of Playground
Equipment
- (c) Catalog of Pool Equip-
ment

13 CRAMER CHEMICAL (36)

Information on Training
Supplies and Textbooks

14 CYCLOTHERAPY (26-27)

Handbook on Motorized
Deep Massaging Device
and 5 Cyclotherapy units

5 AMERICAN WIRE (57)

Folder on Locker Baskets
and Uniform Hanger

15 DAVIDSON WOOLEN (66)

Sample pair Socks (see
adv. for details)

6 ARNETT, RICHARD (51)

Information on Starting
Blocks

16 FAIR PLAY (55, 59)

Catalog on Electric
Scoreboards

ATHLETIC INSTITUTE (55)

17 FENNER-HAMILTON (59)

Literature on Gym-Master
Trampoline

7 AWARD INCENTIVES (64)

Catalog of Trophies, Medals,
Ball Charms, Pins, etc.

18 GENERAL SPORTCRAFT (2)

- (a) Official Game Rules
Booklet
- (b) Rules Booklets for Bad-
minton, Deck Tennis,
Shuffleboard, Table Ten-
nis, Bat Tennis

8 BRADLEY WASHFTN. (57)

Catalog of Multi-Stall
Showers and Washfountains

DVERTISERS' INDEX

19 GRISWOLD, LARRY (64)
Information on Trampoline
Bed and Trampoline Manual

20 HAND KNIT (46)
Information on Wigwam
Socks

21 HARVARD TABLE TENNIS (62)
(a) Table Tennis Teacher
(b) Table Tennis Tournament Charts

22 HILLERICH & BRADSBY (21)
(a) Catalog of Louisville
Sluggers
(b) Famous Slugger
Yearbook
(c) Official Softball Rules

23 HILLYARD CHEMICAL (1)
(a) Booklet, "How to Plan
Your Gym for Favorite
Sports Activities"
(b) Information on "Trophy"
Gym Finish

24 HORN EQUIPMENT (18-19)
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25 HUNTINGTON LABS. (33)
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Finishing" Folder

26 HUSSEY MFG. (63)
Illustrated Seating Catalog

IVORY SYSTEM (Back Cover)

27 JAYFRO ATH. SUPPLY (62)
Catalog of Steel Chain
Basketball Nets

28 K. & P. ATHLETIC (30)
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Crossbars and Dowmetal
Combination High Jumping-
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29 LEAVITT BLEACHER (71)
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Line of Bleachers

30 LINEN THREAD (35)
Catalog of Complete Line
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(c) Locker Room Equipment
(d) Gymnasium Apparatus

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(a) Baseball Catalog
(b) Basketball Catalog
(c) Football Catalog

**37 NATIONAL FOOTBALL
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38 NATIONAL SPORTS (68)
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39 NEVCO SCOREBOARD (49)
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40 NISSEN TRAMPOLINE (31)
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(b) Sample pages of "Two
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(Book)

41 NURRE CO. (22)
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NEW EQUIPMENT ITEMS

Following are the new equipment items illustrated and described in this issue. Page numbers on which they may be found are indicated in the parentheses. For further information on any of these items, circle the respective key numbers on the business reply card below.

- 1 ADJUSTABLE ANKLE WRAP (24)
- 2 STEEL CHAIN NET (24)
- 3 COMBINATION STANDARD (24)
- 4 BASKETBALL DISPENSER (24)
- 5 STARTING BLOCKS (24)
- 6 TABLE-TENNIS TABLE (34)
- 7 WIGWAM FOOT HUGGER (34)
- 8 DOUBLE SPRINGBOARD (34)
- 9 PLASTIC FACE MASK (34)
- 10 ELECTRIC HAND DRYER (34)
- 11 PNEUMATIC THIGH PROTECTOR (34)

Please ask manufacturers indicated by circled numbers below to send free offers. Advertisers, offers, and page on which they may be found appear in the Master Coupon.

FREE LITERATURE

1	2(a)	2(b)	2(c)	2(d)	3(a)	3(b)	4(a)
4(b)	4(c)	5	6	7	8	9	10
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NEW EQUIPMENT INFORMATION

1	2	3	4	5	6	7	8	9	10	11
Name _____										
Position _____										
School _____										
Address _____										
City _____ Zone _____ State _____										

(No coupon honored unless position is stated)

January 1955

CIRCLE CORRESPONDING

A BRIEF HISTORY of the *Ivory System*



We of the IVORY SYSTEM are the founders of the Athletic Equipment Reconditioning Industry. Our business was the first to ever offer a complete reconditioning service to the schools and colleges of the U. S. A.

Only thirty years ago it was customary for soiled, perspiration ridden, athletic equipment to be packed away at the end of various sports seasons without the benefit of cleaning. This same equipment was issued again in its present condition at the beginning of the next sports season.

Experience proved to us that unsanitary equipment was responsible for many of the skin

infections which often affected an entire athletic squad. Single-handedly the IVORY SYSTEM carried on a campaign to eliminate these conditions — and today we can say that the campaign has been highly successful.

One serious infectious trouble which existed thirty years ago and still does is "Athlete's Foot Infection." Little progress has been made in eliminating it. In developing VITA-SAN, we in the IVORY SYSTEM believe that we have found the solution for licking this widely troublesome foot fungus infection.

*VITA-SAN is another IVORY SYSTEM contribution
for the benefit of the World of Athletics*

THE *Ivory System* INCORPORATED
RECONDITIONERS OF ATHLETIC EQUIPMENT
PEABODY, MASSACHUSETTS